The Experience of the Moscow Automatic Subscriber Telegraph Exchange With Fully Automatic System

some minor modifications. The lack of a manual on the subscriber telegraph network, available to subscribers and operators, causes in a number of cases the continuation of the manual system. Therefore, GUMTTS of the USSR Ministry of Communications should speed up the publication of such a manual. The final part of the article is devoted to the numbering of the subscribers of the automatic system, and the tariff classification connected with it. There are 3 diagrams.

ASSOCIATION: Moskovskaya stantsiya abonentskogo telegrafa (Moscow Subscriber Telegraph Station)

KOGAN, V.S.

Isotopic effects in the structural properties of solid bodies.
Usp.fiz.nauk 78 no.4:579-617 D '62. (MIRA 15:12)
(Isotopes) (Solids)

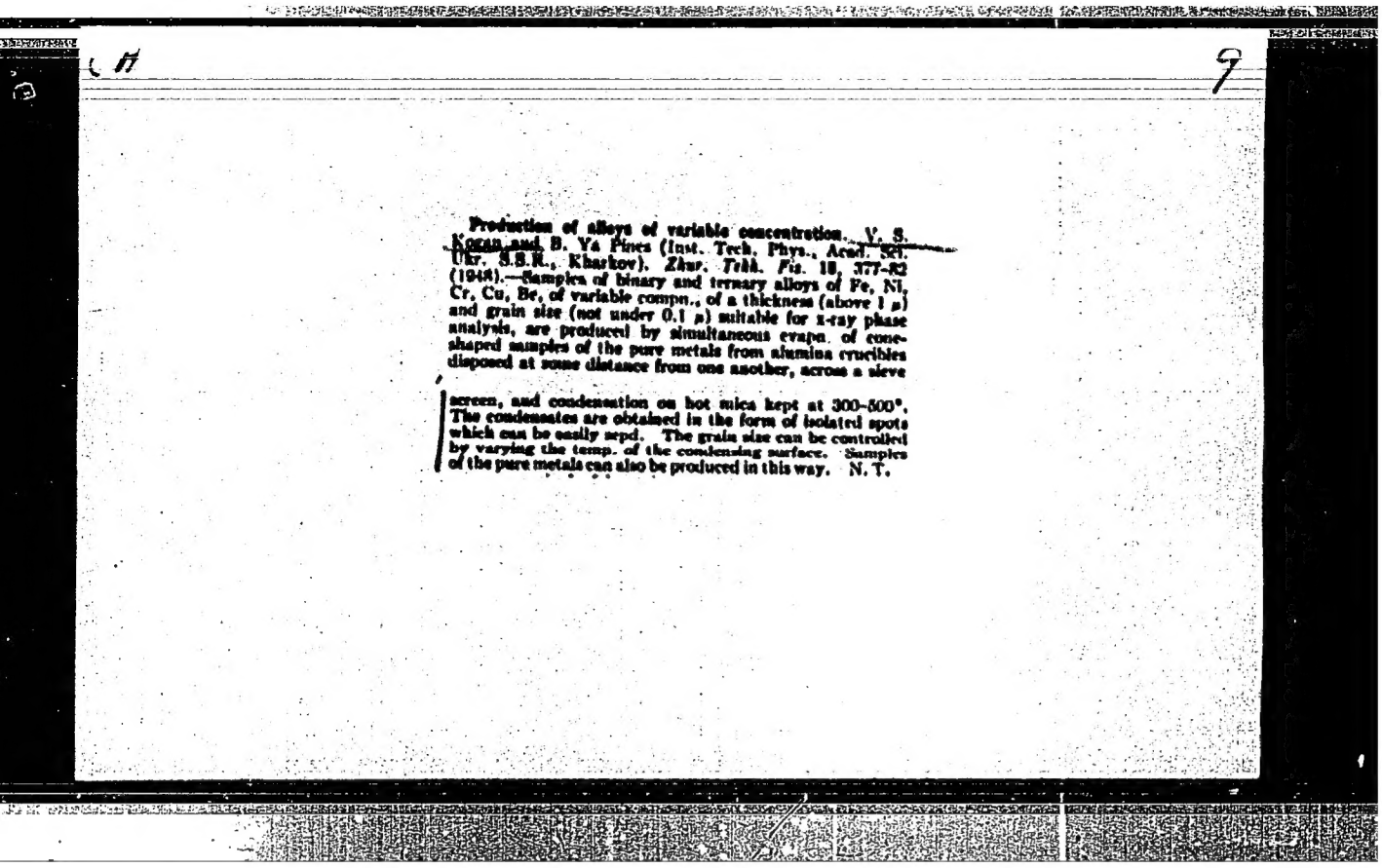
NOVIKOV, Vasiliy Vasil'yevich; ZUBOVSKIY, Leonid Isaakovich; PRAMNEK, German Fritsevich; KOGAN, Valentina Solomonovna; KLYKOV, Semen Ivanovich; NAUMOV, Pavel Alekseyevich; YEMEL'YANOV, Gennadiy Alekseyevich; VORONIN, Nikolay Isidorovich; SERGEYCHUK, K.Ya., red.; GRIGOR'YEV, B.S., red.; FORTUSHENKO, A.D., red.; NOVIKOV, V.V., otv. red.; SMOLYAN, G.L., red.; MARKOCH, K.G., tekhn. red.

[Manual on electric communications; telegraphy] Inzhenerno-tekhnicheskii spravochnik po elektrosviazi; telegrafiia. [By] V.V.Novikov i dr. Moskva, Sviaz'izdat, 1963. 654 p. (MIRA 16:5)

(Telecommunication--Handbooks, manuals, etc.)
(Telegraph--Handbooks, manuals, etc.)

KOGAN, V.S.; KRIVKO, A.I.; LAZAREV, B.G.; LAZAREVA, L.S.

Methodology of graphite tin plating. Zav.lab. 30 no.3:317 '64. (MIRA 17:4)



Production of alloys of variable concentration. V. S. Korsun and B. Ya Pines (Inst. Tech. Phys., Acad. Sci. Ukr. S.S.R., Kharkov). *Zhur. Tekh. Fiz.* 18, 377–82 (1948).—Samples of binary and ternary alloys of Fe, Ni, Cr, Cu, Be, of variable compn., of a thickness (above 1 μ) and grain size (not under 0.1 μ) suitable for x-ray phase analysis, are produced by simultaneous evapn. of cone-shaped samples of the pure metals from alumina crucibles disposed at some distance from one another, across a sieve screen, and condensation on hot mica kept at 300–500°. The condensates are obtained in the form of isolated spots which can be easily sepd. The grain size can be controlled by varying the temp. of the condensing surface. Samples of the pure metals can also be produced in this way. N. T.

USSR/Engineering - Kilns, Ceramic Refractories Oct 49

"Increasing Drying Kiln Productivity at the Podol'sk Chamotte Plant," V. S. Kogan, Engr, 3 pp

"Ogneupory" No 10

Describes drying establishment of Podol'sk Chamotte Plant, consisting of four blocks of dryer chambers, designed by Prof Grum-Grzhimaylo. Chambers were changed over to flue gas by replacing ribbed steam-heat pipes with longitudinal gas-supplying passage. Table of operating data shows 25% increase in charged chambers. Drying

PA 153T36

USSR/Engineering - Kilns, Ceramic (Contd) Oct 49

time decreased 1.5 times, whereas average drying kiln productivity increased 1.4 times by moisture capacity.

153T36

KOGAN, V. S.

KOGAN, V. S. (Engineer)

"Drying Granulated Slag." Thesis for degree of Cand. Technical Sci. Sub 27 Nov 50, Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev.

Summary 71, 4 Sep 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

USSR/Metals - X-Rays Oct 51

"X-Ray Method of Determining Local Composition in Alloys of Variable Concentration," V. S. Kogan, B. Ya. Pines

"Zhur Tekh Fiz" Vol XXI, No 10, pp 1244-1254

Authors refer to their previous work ("Zhur Eksper i Teoret Fiz" Vol XVIII, No 3, 1948) in which they described these techniques. Their method is based on measurements of absorption of monochromatic x-radiation. Describe equipment used. Process measurements of various concns. Authors thank A. A. Lupandina and L. F. Yakimenko for laboratory assistance. Submitted first 10 Apr 50, later 25 Jun 50.

193787

PA 193787

USSR/Metals - X-Rays (Contd) Oct 51

193787

KOGAN, V. S.

USSR/Physics - Monochromatic May/Jun 52
X-ray Sources

"Sharp-Focus X-ray Tube With Regulable Size of the Focal Spot," V. S. Kogan, B. Ya. Pines, Khar'kov State U imeni A. M. Gor'kiy

"Zh Ak Nauk SSSR, Ser Fiz" Vol 16, No 3, pp 339-343

Report heard at the conference on powerful monochromatic x-ray sources, held at Khar'kov 24-26 Jan 52. Authors discuss the attainment of

232T102

232T102

focal spots less than 0.005 sq mm in area by means of regulated positioning of the filament 0.15 mm in diam (diam of the aperture in the cathode cone is 0.5 to 0.6 mm). X-ray pictures by subject tube are distinguished by resolution of the K_{α}-doublet in all lines, even for small exposures (several minutes).

232T102

KOGAN, V. S.

KOGAN, V. S.

British Abstracts
B1, July 1953
Non-Ferrous
Metallurgy.

Equilibrium diagram of the system indium-lead. V. S. Kogan and G. Ya Pines (*C.R. Acad. Sci. U.R.S.S.*, 1952, 87, 771—773).—On the basis of the experimental evidence available in the literature supplemented by *X*-ray analysis of In–Pb alloys of varying composition, and measurements of their electrical resistance at different temp., an equilibrium diagram is constructed. The diagram covers the region 0—40 at.-% Pb. The existence of three different solid phases α, β, and γ, stable at high and low temp., is confirmed. At room temp., α-phase is stable between 0 and 13, γ-phase between 14 and 30, and β-phase between 32 and 100 at.-% of Pb.

S. K. LACHOWICZ.

KOGAN, V.S.

Micromethods of phase analysis of alloys. V. S. Kogan and B. Ya. Pines (*C.R. Acad. Sci., U.R.S.S.*, 1952, **87**, 967–969).—Phase analysis of alloys by the *X*-ray method of varying composition alloy is supplemented at temp. approaching the m.p. by measurements of the electrical resistance of specially prepared specimens. The specimens are in the form of thin wires (diam. ~0·5 mm.) immersed in heated oil baths. The measurement of p.d. across the wire at a given current allows the determination of the resistance. The measurements can be extended to temp. at which a liquid phase appears (solidus) and even to temp. of complete liquefaction (liquidus) due to the fact that the thin wire maintains its form under forces of surface tension and surface oxide film. The positions of both solidus and liquidus curves correspond to discontinuities on the sp. resistance-temp. curve. S. K. LACHOWICZ.

Kogan, V.S.

USSR/Solid State Physics - Mechanical Properties of Crystals and Polycrystalline Compounds, E-9

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34862

Author: Garber, R. I., Gindin, I. A., Kogan, V. S., Lazarev, B. G.

Institution: None

Title: Investigation of Plastic Properties of Beryllium Monocrystals

Original Periodical: Fiz. metallov i metallovedeniye, 1955, 1, No 3, 529-537

Abstract: Specimens made of Be (99.7%) were subjected to single-axis compression at temperatures from -253 to 800°. The speed of deformation was constant (0.03 mm/sec). At higher temperatures, the tests were performed in vacuum. The specimens were shaped as rectangular parallelopipeds. The axis of the compressing forces was in the plane of the base (001). Over the entire temperature range, the deformation of Be was accompanied by the appearance of twin streaks. The twins occurring at -253 and 196°, were characterized by small thickness (2-4 mu) owing to the considerable reinforcement on their boundaries with the mother crystal. At higher temperatures, thicker streaks are formed. When the individual streaks merge with each other, the entire volume of the crystal is transformed into the twin state without damage to its solidity. The

- 1 -

1 of 2

USSR/Solid State Physics - Mechanical Properties of Crystals and Polycrystalline Compounds, E-9

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34862

Author: Garber, R. I., Gindin, I. A., Kogan, V. S., Lazarev, B. G.

Institution: None

Title: Investigation of Plastic Properties of Beryllium Monocrystals

Original Periodical: Fiz. metallov i metallovedeniye, 1955, 1, No 3, 529-537

Abstract: transition of the Be monocrystal into a fully-twinned state is related to the process of mechanical twinning in the (102) plane, and is particularly easy to effect at 400° and above. In addition to the principal system of twins along (102), one observes also twins in the (101) and (103) planes. The mechanism of slipping of Be depends substantially on the temperature and orientation of the specimen. In some specimens, base slipping is observed even at -196°. The plasticity of Be, which increases monotonically with temperature, reaches a maximum at 400° (δ = 26%) and diminishes somewhat at 600°, and increases again at 800°. The mechanical characteristics of the plasticity of monocrystals of beryllium are determined, and their dependence on temperature. The yield point when slipping along the (100) and (101) planes diminishes by approximately 4 times when heated from 200 to 800°.

2 of 2 - 2 -

KOGAN, V. S.

Category : USSR/Soldi State Physics - Mechanical Properties of Crystals and Crystalline Compounds E-9

Abs Jour : Red Zhur - Fizika, No 3, 1957, No 6787

Author : Garber, R.I., Gindin, I.A., Kogan, V.S., Lazarev, B.G.
Inst : Physico-Technical Institute, Academy of Sciences, Ukraine SSR
Title : X-ray Investigation of the Plasticity of Single Crystals of Beryllium

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 6, 639-640

Abstract : X-ray diffraction, metallography and micro-interferometry have been used to investigate single crystals of beryllium, cut in the form of rectangular parallelopipeds, with one of the faces aligned with the plane of the base. The specimens were deformed by unilateral compression at temperatures from -253 to 800°. The results of the Investigations are summarized in a table.

Card : 1/2

Category : USSR/Solid State Physics - Mechanical Properties E-9
Crystals and Crystalline Compounds

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6787

Abstract :

Character of Plasticity & its Elements

Orientation of Single Crystal	Mechanical Twining		Total Reori-On-tation; symmo-try place (102)	Slippage	
Binary Axis [100] perpendicular to compression axis			400° plus	400/800° in twin region.	200/800° in O-rig. sin-glo crys-tal
Binary Azis [100] parallel to compression axis	400° plus	400° plus	Room temp & above	-196/800° in twin region	

CARD 2/2

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1613
AUTHOR KOGAN, V.S., LAZAREV, B.G., BULATOVA, R.F.
TITLE The Crystal Structure of Hydrogen and Deuterium.
PERIODICAL Zurn.eksp.i teor.fis, 31, fasc.3, 541 - 541 (1956)
Issued: 12 / 1956

The present work investigates the structure of solid deuterium. The samples of liquid D were produced by condensation on a copper capillary filled with liquid helium. By the method of sharp focussing roentgenographs with distinct lines were obtained after exposure of from 1 to 2 hours. Unfortunately, the lines of D are visible only under small angles, which renders a reliable interpretation of the X-ray pictures and an exact determination of lattice parameters difficult. With the highest degree of reliability attainable in this case, the structure of D was determined as tetragonal with the axial ratio c/a = 0,94 and with the parameter a = 5,4 Å . The density D in this case amounted to 0,18 g/cm^3. This result made it necessary tocheck the data concerning the structure of hydrogen, because the difference in the structure of the lattices of H and D appeared strange. Such a difference could occur particularly in the case of the existence of a polymorphism with a transformation temperature of ~4,2° K in both isotopes. However, neither H nor D change their structure at from 1,5 to 4,1° K.
In the work by W.H.KEESOM et al.Comm.Phys.Univ.Leiden, 209 d,(1930) on the structure of solid H no roentgenographs are mentioned, but they apparently consist of individual reflexes through which DEBYE's arcs were plotted. A simple utilization of such a roentgenograph taken in accordance with the conditions

Žurn.eksp.i teor.fis, 31, fasc.3, 541 - 541 (1956) CARD 2 / 2 PA - 1613

resulting from KEESOM's work shows that the breadth of lines covers the spacing between some neighboring lines. Thus, the reflexes assigned by KEESOM et al. to various lines may belong to one single line. This may probably also explain the fact that to the 5 intense lines in KEESOM's roentgenographs there correspond three lines in the roentgenograph described here. Furthermore, KEESOM et al. erroneously assigned several lines to the β - spectrum. When a filter which eliminates β - radiation was used, all lines belonged to the system of interferences originating from Kα - radiation. In the authors' opinion, the data found in the LEIDEN laboratory and accepted by all books of reference are wrong. The authors believe that the roentgenographs of H indicate a tetragonal structure. The assumption that the lattices of H and D belong to a non-cubical syngony is confirmed by the fact that, according to observations made by the authors, they have a double radiation refraction. This does not confirm previous assumptions that solid hydrogen is optically isotropic.

INSTITUTION: Physical-Technical Institute of the Academy of Sciences of the Ukrainian SSR.

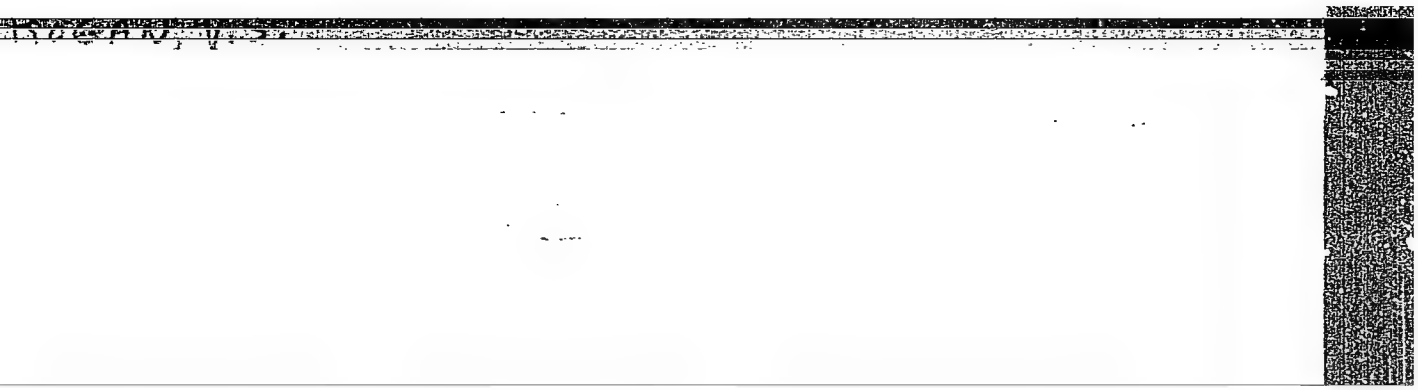
KOGAN, V.S.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1479
AUTHOR GARBER,R.I., GINDIN,I.A., KOGAN,V.S., LAZAREV,B.G.
TITLE The Recrystallization of Metals at Low Temperatures.
PERIODICAL Dokl.Akad.Nauk, 110, fasc.1, 64-66 (1956)
Issued: 11 / 1956 reviewed: 11 / 1956

This work deals with the direct observation of the microstructure of technical iron (0,03% C) and nickel deformed at the temperature of liquid nitrogen. The examination of iron and nickel makes it possible to explain the influence exercised by the principal forms of plastic deformation, namely of twin-formation(?) and creeping on the creation of inhomogeneities of the crystal lattice caused by deformation and on the occasion of processes of recrystallization which are due to these inhomogeneities. Fine- and rough-grained samples with 25-30μ and 100 - 200μ diameter were examined. Deformation was brought about either by rolling or by pressing a hardened ball through an immobile thin-walled tube in liquid nitrogen. The degree of deformation was between 5 and 14%. The X-ray structure analysis was carried out: a) in the initial state, b) immediately after the deformation in liquid nitrogen without heating up to room temperatures, c) after a 10 to 12 hours' stay period at room temperature. Parallel with X-ray investigation a metallographical investigation of the samples was carried out.
In the case of the iron and nickel deformed in liquid nitrogen the structure was refined by recrystallization after heating up to 20°. A microphotograph of the structure is attached. While the ball is pressed through the tube (in liquid nitrogen) a deformation structure is produced in the sample which is destroyed

by subsequent heating up to room temperature. A similar structural change is found in iron samples after rolling in liquid nitrogen, but in this case the degree of refinement is higher than on the occasion of pressing the ball through the tube. The degree of refinement in iron and nickel after treatment at low temperatures followed by heating to 20° depends on the size of grain of the initial structure as well as on the degree of deformation. For the production of microdistortions the initial stages of deformation are of importance at low temperatures, on which occasion the work performed by exterior forces goes over nearly entirely into the latent deformation energy. On the occasion of deformation (beginning with an 8% deformation) as a result of pressing a ball through a tube micropores are produced, a process which may be connected with mechanical twin formation. In all the cases of recrystallization at low temperatures investigated on this occasion, deformation was brought about by the formation of creeping stripes either in a pure form (nickel) or in connection with twin formation (iron).

INSTITUTION: Physical-Technical Institute of the Academy of Science in the USSR.



APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723620004-7"

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723620004-7"

KOGAN, V.S.

AUTHOR: Garber, R.I., Kogan, V.S. and Polyakov, L.M. 113

TITLE: Coagulation of pores in polygonised common salt. (Koagulyatsiya por v poligonizovannoy kamennoy soli.)

PERIODICAL: "Fizika Metallov i Metallovedenie" (Physics of Metals and Metallurgy), 1957, Vol.IV, No.1 (10), pp. 89-93, (U.S.S.R.)

ABSTRACT: Annealing at 780 °C of common salt single crystals under natural conditions or subjected to slight plastic deformations causes polygonisation. Utilising the translucency of specimens, it was possible to study optically the process of coagulation of pores at the surface of blocks and the macromosaic of blocks forming during the process of polygonisation. It is shown that the point boundaries of the blocks forming during polygonisation of pure single-phase substances consist of chains of coagulated pores. The formation of a step-wise relief at the surface of the crystal near the pores have been established which has the shape corresponding to the orientation of the faces of the cube and the faces of a rhombic dodekhedron lattice of common salt. Comparing the results described in this paper with known observations of polygonisation processes in metals, it can be assumed that metallographic detection of blocks is apparently possible only in cases in which the metal possesses pores, admixtures or other

Coagulation of pores in polygonised common salt. (Cont.) 113

easily diffusing components, although blocks can also occur which cannot be detected metallographically.
7 figures, 12 references, 5 of which are Russian.

Physico-Technical Institute,
Ac.Sc. Ukraine.

Recd. May 3, 1956.

KOGAN, V.S.

126-2-17/35

AUTHORS: Gindin, I. A., and Kogan, V. S.

TITLE: State of the surface layer of a single zinc crystal after grinding and annealing. (Sostoyaniye poverkhnostnogo sloya monokristalla tsinka posle shlifovki i otzhiga).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.2, pp. 326-330 (USSR)

ABSTRACT: In earlier work of the authors (Ref.3), it was found that work hardening caused by grinding activates diffusion processes which then may become very intensive even at room temperature. It was, therefore, considered of interest to machine such specimens and make X-ray exposures of these under conditions such that these processes are either completely eliminated or at least appreciably reduced. For that purpose zinc monocrystals were ground along their cleavage planes at the temperature of liquid nitrogen (-196°C) and X-ray patterns taken directly after grinding, prior to heating them to room temperature and after "annealing" at room temperature and at 100, 150 and 200°C. Comparison of the structure of the surface layer of zinc specimens ground at -196°C with those ground at room temperature enabled elucidation of the influence of the mechanical properties on the processes taking place

Card 1/3

State of the surface layer of a single zinc crystal after grinding and annealing.

in the specimen during grinding. As a result of annealing of the specimens, certain details were detected in the state of the lattice of the surface layer of the specimens after grinding, which were not detected in previous experiments, during which the specimens were work hardened and subsequently investigated at room temperature without any heat treatment. It was found that the surface layer of the monocrystal breaks up into fine grains which are disorientated more strongly in specimens for which the work hardening was effected at the liquid nitrogen temperature. The annealing does not re-establish the monocrystal nature in the surface layer and leads to recrystallization with grain growth towards the depth of the monocrystal. Under the recrystallized zone there is a layer in which the monocrystal consists of blocks with orientations approaching the initial orientation and the depth of these layers increases with the annealing temperature. In crystals deformed at the temperature of liquid nitrogen and annealed at 200°C, the non-distorted monocrystal was detected only after etching to a depth of

Card 2/3 300μ. In crystals deformed at room temperature and

State of the surface layer of a single zinc crystal after grinding and annealing.

subsequently annealed, the depth of the distorted zones was greater still. X-ray patterns and micro-photographs are included.
There are 4 figures and 7 references, 5 of which are Slavic.

SUBMITTED: April 16, 1956 (Initially), December 18, 1956 (after revision).

ASSOCIATION: Physico-Technical Institute Ac. Sc. Ukrainian SSR. (Fiziko-Tekhnicheskiy Institut AN USSR).

AVAILABLE: Library of Congress.

Card 3/3

SOV/126-6-5-29/43

AUTHORS: Garber, R. I., Kogan, V. S., and Polyakov, L. M.

TITLE: Dislocations or Pores? (Dislokatsii ili pory ?)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 5, pp 934-935 (USSR)

ABSTRACT: Hirsch et al. (Ref 1) reported direct observation of dislocations which appear in aluminium foils rolled down or otherwise reduced to 0.5 μ thickness, annealed in vacuum and etched in a dilute hydrofluoric acid solution. These dislocations were observed by means of an electron microscope. The present authors suggest that the electron micrographs given by Hirsch et al. may also be interpreted as assemblies of micropores at boundaries of blocks of polygonized aluminium. Such micropores were observed by the present authors (Ref 2) in their studies of polygonization of rock-salt. Comparison of optical micrographs of polygonized rock-salt with electron micrographs of aluminium films (Fig 2, taken from Ref 1) shows that they are very similar. In both cases the mutual orientation of adjacent blocks is almost the same (1-2°) and the distances between defects distributed

Card1/3

along block boundaries differ by three orders of magnitude, simply because of the difference between the magnification in the two cases (400X optical, 100 000X electron-microscopic). In photographs reproduced by Hirsch et al. there are lines, marks, spots, etc. inside polygonized blocks. These are ascribed to dislocation lines and traces. The present authors point out that such marks, lines etc. may also be due to non-uniformities which are produced inside polygonized blocks by deformation. Annealing by the electron microscope beam produces grouping of vacancies along such non-uniformities and some of such groupings may migrate to the block surfaces. The authors conclude, therefore, that the results of Hirsch et al. cannot be taken as a proof of the presence of dislocations in their aluminium samples. In contrast to Hirsch et al. (Ref 1), Heidenreich (Ref 4) did not observe any dislocations or pores in aluminium foils produced by rolling and electrolytic etching with intermediate annealing. This may be due to insufficient saturation with vacancies of such foils, because Hirsch et al. reduced the thickness of their

samples to 0.5 μ, while Heidenreich's samples were of 125 μ thickness.
There are 2 figures and 4 references, 2 of which are Soviet and 2 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR
(Physico-Technical Institute, Ac.Sc., USSR)

SUBMITTED: August 26, 1957

SOV/126-7-5-13/25

AUTHORS: Burlakov, V. D. and Kogan, V. S.

TITLE: Intermetallic Phases Formed in the Iron-Tantalum System as a Result of Diffusion (Intermetallicheskiye fazy, voznikayushchiye pri diffuzii v sisteme zhelezo-tantal)

PERIODICAL: Fizika metallov i metallovedeniye, Vol 7, Nr 5, pp 708-712, 1958 (USSR)

ABSTRACT: In this paper diffusion in the iron-tantalum boundary of bimetallic specimens, made either by deposition of iron on a tantalum plate from the gaseous phase in vacuum, or by directly uniting the two metals in the solid phase, has been studied. Such bimetallic specimens were soaked in vacuum for a long time at 1200-1400°C, and studied metallographically and by X-ray methods. In the micro-section a layer of the intermetallic compound Fe_2Ta can clearly be seen at the place of contact between iron and tantalum (held at 1200°C for 100 hours) (see Fig.1). Fig.2 shows the micro-specimen of an alloy (5 at. % Ta) formed as a result of diffusion at 1400°C. Fig.3 shows a micro-section of an alloy (20 at. % Ta) formed as a result of diffusion at 1400°C. Fig.4 shows the micro-section of an alloy (55 at. %

Card 1/4

Intermetallic Phases Formed in the Iron-Tantalum System as a Result of Diffusion

Ta) formed as a result of diffusion at 1400°C. Fig.5 shows a micro-section of an alloy (55 at. % Ta) formed as a result of diffusion at 1400°C. In Fig.6 X-ray pictures of phases forming during the diffusion of tantalum in iron are shown. The intermetallic compound Fe_2Ta has a lattice of the Zn_2Mg type (see Tarschisch, Ref.6), consisting of 4 atoms of tantalum and 8 atoms of iron per unit cell. In the Zn_2Mg lattice, which is isomorphous with that of Fe_2Ta, magnesium atoms can displace 2 of the 8 zinc atoms, in which case the compound ZnMg forms, having a lattice analogous to that of Zn_2Mg (see Tarschisch, Ref.7). It is possible to assume that such a displacement takes place in the Fe_2Ta lattice with the formation of the compound FeTa. As a result of the above investigation an iron-tantalum equilibrium diagram is suggested, having an appearance analogous to that of magnesium-zinc, containing intermetallic phases which are isomorphous with those of the iron-tantalum system. In Fig.

Intermetallic Phases Formed in the Iron-Tantalum System as a Result of Diffusion

8e this equilibrium diagram is shown. Its "iron" corner (up to 33 at. % tantalum) is known from literature data (see Genders et alii, Ref.1). For the construction of the "tantalum" portion of the diagram the following data were available to the authors: 1. The existence of an intermetallic compound corresponding to the composition FeTa; 2. The composition of the eutectic-60 at. % tantalum. An X-ray investigation has shown that the eutectic consists essentially of the intermetallic compound FeTa. (3) The eutectic temperature, which is approximately 1360°C. 4. The existence of equilibrium between the intermetallic compound Fe_2Ta and the liquid phase, rich in tantalum, at a temperature above 1400°C and the precipitation from the liquid phase of crystals of FeTa at a temperature below 1400°C. 5. The absence of a gradual transition from the Fe_2Ta lattice to the FeTa lattice.

Card 3/4

There are 8 figures and 7 references, of which 1 is Soviet, 1 English and 5 German.

SOV/126-- -7-5-13/25

Intermetallic Phases Formed in the Iron-Tantalum System as a Result of Diffusion

ASSOCIATION: Fiziko-tekhnicheskiy institut, AN USSR (Physico-Technical Institute, AS Ukrainian SSR)

SUBMITTED: January 29, 1958

Card 4/4

KOGAN - V. S.

AUTHORS: Kogan, V. S., Lazarev, B. G., Bulatova, R. F. 56-1-42/56

TITLE: On the Phase Diagram of the System Hydrogen - Deuterium (O diagramme sostoyaniya sistemy vodorod-deyteriy)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 238-240 (USSR)

ABSTRACT: At first reference is made to papers dealing with the same subject. In the Congress on Physics of Low Temperatures held in June 1956 in Leningrad reports were also made on the results of investigations of the crystal-structure of the mixtures of hydrogen-isotopes. The solid solutions in such a system only exist in limited domains of concentration. The present paper gives more accurate data on this system which were obtained on the basis of the thermal analysis of the hydrogen-deuterium mixtures. The mixtures produced of pure isotopes were condensed in a calorimeter immersed in liquid hydrogen. After the evacuation the mixture was slowly heated in the temperature interval 14 - 19°C. The thermal analysis showed a horizontal part on the solidus curve at 16,4°K. By a comparison of the data of the thermal analysis with the results of the X-ray photographs at a temperature of 4,2°K the approximate boundaries of the domain of the separation

Card 1/3

in layers could be determined and the phase diagram hydrogen--deuterium in general could be outlined. The existence of the peritectic surface in crystallizations of the mixtures at concentrations of from 26 to 52 per cent by volume of hydrogen was visually verified. In parallel with the thermal analysis the X-ray structure investigations of the hydrogen--deuterium mixtures and of the pure isotopes were continued. A certain perfection of the method of photographing permitted the removal of the parasitic lines. The roentgenograms contain 2 hydrogen-lines which correspond to the distances d ~ 3,15 Å and d ~ 2,79 Å between the planes. Of the deuterium-lattice only one line with d ~ 2,04 Å exists. Due to the high decrease of the intensity of scattering no lines exist under large angles. There exists a concentration range in which the solid mixtures of hydrogen and deuterium are two-phase. The problem of the exact structure of hydrogen and deuterium still remains unsolved. In any case the lattices of hydrogen and deuterium are different. The results obtained here indicate a separation in layers in the solid mixtures of the hydrogen isotopes and correspond to the conclusions drawn by Prigozhin (reference 3) on the existence of a critical temperature, below which the isotope mixtures

24(2)

AUTHORS: Garber, R. I., Kogan, V. S., Polyakov, L. M. SOV/56-35-6-7/44

TITLE: The Growth and the Dissolution of Pores in Crystals (Rost i rastvoreniye por v kristallakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1364-1368 (USSR)

ABSTRACT: In the present paper the authors describe the experimental determination of the time-dependence of diffusion processes of sintering and of pore coalescence in rock salt. The results obtained agree well with the theoretical formulae by I.M. Lifshits and V.V. Sledov (Ref 1): $\overline{R^3}=(4/9).D_v\alpha\tau$, $\xi(\tau) = 2(D_v\alpha\tau)^{1/3}/Q_0^{1/3}$ and $\alpha = \sigma V c_0/kT$ (D_v = diffusion coefficient of vacancies, τ = duration of sintering, Q_0 = total initial oversaturation, σ = surface tension, V = the volume of a vacancy, c_0 = vacancy concentration; the first equation describes the law of pore growth, the second the time-dependence of the zone breadth ξ in which the pores dissolve). The authors numerically determined a number of parameters characterizing diffusion in rock salt, as e.g. the diffusion

Card 1/3

coefficient D(T), T in °K:

T	C
693	$7.9.10^{-10}$
773	$3.1.10^{-9}$
923	$1.6.10^{-8}$
1023	$0.7.10^{-7}$

further, the time-dependence of the breadth of the sintering zone for 500 and 650°C (Fig 4), the dependence of pore dimension on sintering of long duration (t-500°C) (Fig 5), ln(/) as a function of ln (Fig 6), etc. Attached to this article are very good photographs of salt-, iron-, and magnesium single crystals, of pores and salt crystal bridges in various degrees of enlargement, at various sintering temperatures, and various durations of sintering (up to 60 hours). It is shown that sintering phenomena develop not only as a result of the dissolution of pores and the direct exit of the vacancies on the free surface, but also via an intermediate stage in which the vacancies accumulate on macrodefects with subsequent formation of large negative crystals on the latter. Coalescence of pores was observed in the annealing of single crystals of metallic samples, the preparation method of which (vacuum distillation etc.) is made responsible for the initial porosity. Thus, the vacuum treatment of iron crystal took 42 hours at 1000°C (Fig 11), that of the Mg single crystal 60 hours at 400-420°C. In conclusion

the authors thank Professor I. M. Lifshits and V. V. Slezov for discussions, and V. K. Sklyarov for his help in carrying out the experiments.-There are 12 figures, 1 table, and 4 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physico-Technical Institute of the Academy of Sciences, Ukrainskaya SSR)

SUBMITTED: June 17, 1958

SOV/120-59-1-42/50

AUTHORS: Kogan, V. S., Selivanov, V. P., Bulatova, R. F.

TITLE: A Microfocus X-ray Tube with an Adsorption Pump (Ostrofokusnaya rentgenovskaya trubka s adsorbtsionnym nasosom)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 145-147 (USSR)

ABSTRACT: The focus in this tube is about 100 μ across; the electron optics are not described, but a detailed drawing of the tube is given, without dimensions. The main design details of the tube are stated to be given in Ref (1). The main attention is given to the pump, which consists of a trap cooled in liquid nitrogen and filled with 200 g of charcoal. Provision is made to heat the charcoal to 100°C under vacuum to regenerate it. The apparatus is fitted with a fore-vacuum pump, but not with a diffusion pump. It is stated that a vacuum better than

Card 1/2

SOV/120-59-1-42/50

A Microfocus X-ray Tube with an Adsorption Pump

10^{-5} mm Hg is reached in less than 5 min. The paper contains 2 figures and 7 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR (Physico-technical Institute of the Academy of Sciences, Ukr.SSR)

SUBMITTED: January 10, 1958.

Card 2/2

KOGAN, V. S.

24(0) SOV/30-59-2-42/60

AUTHOR: Khalatnikov, I. M., Doctor of Physical and Mathematical Sciences

TITLE: Investigations of Low-temperature Physics (Issledovaniya po fizike nizkikh temperatur)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 98-100 (USSR)

ABSTRACT: The 5th All-Union Conference on this problem took place in Tbilisi from October 27 to November 1, 1958. It was attended by physicists from Moscow, Khar'kov, Leningrad, Tbilisi, Sverdlovsk, and Kiyev. 4 fields of low-temperature physics were discussed: superliquidity of liquid helium II, supraconductivity, antiferromagnetism, magneto-resistive effect. The following reports and communications were heard: A. A. Abrikosov. L. P. Gor'kov reported on the investigation of the properties of supraconductive alloys. A. A. Abrikosov, L. P. Gor'kov, I. M. Khalatnikov spoke of properties of supraconductors in the high-frequency magnetic field. D. V. Shirkov and Chou' Chun'-yan' and Chzhou Si-chin', two young Chinese scientists working at Moscow University, described investigations for determination of the influence exercised by the Coulomb (Kulon) interaction of charges on supraconductivity. V. V. Tolmachev explained the

Card 1/4

nature of the so-called collective excitations of the Bose type in supraconductors. D. N. Zubarev, Yu. A. Tserkovnikov spoke of the thermodynamics of supraconductors and B. T. Geylikman. V. Z. Kresin of the thermal conduction of supraconductors. Yu. V. Sharvin, V. F. Gantmakher reported on experimental work with supraconductors. N. V. Zavaritskiy spoke of the measurement of the anisotropy of thermal conductivity in the supraconductive state. In a series of reports problems of the superliquidity of helium were discussed, which was discovered in 1938 by P. L. Kapitsa and the theory of which was set up in 1941 by L. D. Landau. E. L. Andronikashvili and his collaborators investigated the properties of rotating helium. V. P. Peshkov spoke of the effect of the formation of the boundary between superliquid and non superliquid helium. Guan Vey-yan', collaborator of the Institut fizicheskikh problem (Institute of Physical Problems) investigated the properties of the so-called jump in temperature of Kapitsa. I. M. Lifshits, V. G. Peschanskiy investigated galvanomagnetic phenomena in strong magnetic fields for metals with open Fermi surfaces. N. Ye. Alekseyevskiy, Yu. P. Gaydukov experimentally investigated the resistance anisotropy of gold monocrystals in the

Card 2/4

magnetic field. L. S. Kan, B. G. Lazarev combine the presence of a temperature minimum with the structural state of the [illegible] M. Ya. Azbel' reported on the quantum theory of metallic [illegible]ductivity in the alternating electromagnetic and constant magnetic field. A. S. Borovik-Romanov reported on the weak ferromagnetism in antiferromagnetic samples of $MnCO_3$. N. M. Kraynes, Ye. A. Turov investigated the magnetic anisotropy of the antiferromagnetic monocrystals $CuSO_4$ and $CoSO_4$. R. A. Alikhanov reported on neutronographic investigations of antiferromagnetics. Ya. S. Kondorskiy and collaborators reported on the susceptibility of nickel and nickel-copper alloys at low temperatures. M. I. Kaganov, V. M. Tsukernik reported on kinetic phenomena in ferromagnetics at low temperatures. A. I. Akhiyezer, V. G. Bar'yakhtar, and S. V. Peletminskiy spoke of computations of the relaxation of the magnetic moment in ferromagnetic dielectrics at low temperatures. T. I. Sanadze spoke of observation results of paramagnetic resonance of terbium in the $TbBO_3 \cdot 6H_2O$ nitrate. G. R. Khutsishvili gave a theoretical analysis of the orientation of the nuclear spin in the Overhauser (Overkhauzer)

Card 3/4

effect in nonmetals. B. N. Samoylov, M. M. Reynov and collaborators reported on obtaining orientated nuclei. M. P. Bilatova, V. S. Kogan and B. G. Lazarev showed that hydrogen isotopes in solid state have different structures. I. A. Gindin, B. G. Lazarev, Kh. D. Starodubov and V. I. Khotkevich detected polymorphism in a number of metals at low temperatures. E. L. Andronikashvili, V. P. Peshkov and N. F. Veltov reported on the stage of development of foreign scientific research work in the field of low-temperature physics. At the end of the Conference P. L. Kapitsa spoke of his successful development of investigations in the field of low-temperature physics. The participants of the Conference visited the Institut fiziki Akademii nauk Gruzinskoy SSR (Physics Institute of the Academy of Sciences of the Gruzinskaya SSR) and the Physics Faculty of Tbilisi University as well as the building of the new research atomic reactor near Tbilisi.

24 (7), 24 (2)

AUTHORS: Kogan, V. S., Lazarev, B. G., Bulatova, R. V.

SOV/56-37-3-15/62

TITLE: Diffraction of X-Rays in Polycrystalline Samples of Hydrogen Isotopes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3 (9), pp 678-683 (USSR)

ABSTRACT: The authors already showed (Ref 1) that the diffraction picture of X-rays on polycrystalline samples of hydrogen, deuterium, and their mixtures depends on the isotope composition of the sample. In this connection the authors believed an investigation of tritium (which is similar to deuterium as regards weight, but to hydrogen with respect to the energy spectrum - half-integral spin -) to be of interest. In figure 1 the experimental arrangement, in which the X-ray pictures of the solid samples of hydrogen isotopes were recorded, are shown and discussed. Figure 2 shows the tritium X-ray picture (copper lines were used as comparison standards) and figure 3 the X-ray pictures of D_2 and H_2. A comparison of the interference patterns indicates the existence of isotopic polymorphism. The difference in the structure of

Card 1/3

hydrogen and deuterium and the similarity of the structure of the latter to that of tritium shows that the polymorphism is not due to a difference in the energy spectra but to a difference in the atomic weight. The observed differences in the structure of hydrogen isotopes are in accordance with the hydrogen-deuterium state diagram investigated in reference 1. A table shows the data obtained concerning the structural parameters of the hydrogen isotopes. Tritium and deuterium have a tetragonal lattice with $c/a = 1.73$ and $a = 3.3$ and 3.35 Å respectively, hydrogen has a tetragonal lattice with $c/a = 0.82$ and $a = 4.5$ Å or a hexagonal lattice with $c/a = 1.73$ and $a = 3.7$ Å. The densities at 4.2° K for tetragonal hydrogen are 0.09 and for hexagonal hydrogen 0.089, for deuterium 0.205, and for tritium 0.324 (for comparison the data obtained by other authors are also given). Figure 6 shows an enlarged X-ray picture of a mixture of hydrogen and deuterium (80 vol% D_2), in which the lines of the solid solution of hydrogen in deuterium are clearly discernible. The results obtained are discussed, and the authors thank M. N. Massalitin for the production of the cryostat used. There are 6 figures, 1 table, and 6 references, 2 of which are Soviet.

KOGAN, V.S.; LAZAREV, B.G.; ZHDANOV, G.S.; OZEROV, R.P.

Cryostat for neutron diffraction studies at hydrogen and helium temperatures. Kristallografiia 5 no.2:320-321 Mr-Ap '60. (MIRA 13:9)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Cryostat) (Neutrons--Diffraction)

68631

18.8200

S/126/60/009/02/021/033
E111/E335

AUTHORS: Mikhaylov, I.F., Kogan, V.S. and Kosik, N.A.

TITLE: The Reasons for the Brittleness of Tungsten, Annealed in Vacuum

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 2, pp 283 - 287 (USSR)

ABSTRACT: The apparatus used in the experiment is shown in Figure 1. A high vacuum was obtained by using low-temperature methods. The specimen (in the form of a wire) was heated by passing an electric current through it. Annealing was carried out for one hour at temperatures of 1 000 to 3 200 °C. From 1 000 to 1 200 °C a surface film of oxide is formed and the mechanical properties of annealed specimens in an ordinary or in a "cold" vacuum are the same. Above 1 200 °C the oxide film disappears. At 1 300 °C specimens annealed in a "cold" vacuum are plastic and those in an ordinary vacuum are brittle. The wire heated in a "cold" vacuum has a considerably lower elastic limit than the original specimen. The specimens annealed in a "cold" vacuum retain their plasticity up to 2 100 °C. It is proposed

Card1/2

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S/126/60/009/02/021/033
E111/E335

The Reasons for the Brittleness of Tungsten, Annealed in Vacuum

that the reason for the brittleness of samples annealed in an ordinary vacuum is the formation of a layer of tungsten carbide on the surface. This is confirmed by X-ray analysis. Removing this layer by etching restores the plastic properties. Above 2 100 °C the change in plastic properties is due to recrystallization. This has been shown by X-ray analysis. Acknowledgments are expressed to Professor Ye.S. Borovik for his criticism and useful comments.
There are 2 figures and 10 references, 3 of which are English, 1 German and 6 Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR (Physico-technical Institute of the Ac.Sc., Ukrainian SSR

SUBMITTED: July 7, 1959

Card 2/2

VASYUTINSKIY, B.M.; KOGAN, V.S.; KARTMAZOV, G.N.; YAKIMENKO, L.F., diplomnitsa

Constitutional diagram of the nickel - chromium system. Fiz. met. i metalloved. 9 no. 4:558-563 Ap '60. (MIRA 14:5)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Phase rule and equilibrium)
(Nickel-chromium alloys--Metallography)

VASYUTINSKIY, B.M.; KOGAN, V.S.

Interaction between molybdenum and chromium in nickel-saturated alpha hard solutions. Fiz. met. i metalloved. 9 no.4:564-568 Ap '60. (MIRA 14:5)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Chromium-molybdenum steel--Metallography)
(Phase rule and equilibrium)

BULATOVA, R.F.; KOGAN, V.S.; LAZAREV, B.G.

Crystalline structure of solid hydrogen deuteride. Zhur. eksp. i teor. fiz. 39 no. 6:1853 D '60. (MIRA 14:1)
(Hydrogen) (Deuterium)

KOGAN, V. S.

USSR (cont.)

ALIKHANOV, R. A., Institute for Physical Problems imeni S. I. Vavilov, Academy of Sciences USSR, Moscow - "Neutronographic study of $NiCO_3$" (Section J-2)

BELOV, N. V., Associate Director, Institute of Crystallography, Academy of Sciences USSR, Moscow - "Magnetic (ferromagnetic) space group symmetry" (C-6)

BELOV, N. V., NERONOVA, N. N., Both Institute of Crystallography, Academy of Sciences USSR, Moscow, DONNAY, J. D. H., Johns Hopkins University, Baltimore, Md., and DONNAY, G. H., Geophysical Laboratory, Carnegie Institution, Washington, D. C. - "Tables of magnetic space groups, II. Special positions" (C-6)

BOROVIK-ROMANOV, A. S., Institute for Physical Problems imeni S. I. Vavilov, Academy of Sciences USSR - "Antiferromagnetic resonance in carbonated of transition elements" [sic] (M-16)

BOROVIK-ROMANOV, A. S., ALEKSANYAN, G. G., RUDASHEVSKIY, G. Ye. - "Piezomagnetic effect in antiferromagnets" (M-18)

KONDORSKIY, Ye. I., Head, Magnetism Laboratory, Moscow State University - (1) "The electrical and galvanomagnetic properties of thin films at very low temperatures" (M-5); (2) "On the connection between the spontaneous magnetization of current carriers and the Nernst-effect in ferromagnetic metals" (M-4); "The exchange interaction and magneto-effects in ferrites-garnets" (M-15)

LOBACHEV, B., and VAYNSHTEYN, B., Institute of Crystallography, Moscow - "Electron diffraction study of thiourea CO $(NH_2)_2$"

LYASHENKO, B. G., Central Scientific Research Institute of Metallurgy, Moscow - "The problem of the influence of spontaneous magnetization on crystal structure and phase state of alloys" (M-8)

LYASHENKO, B. G., LIVITIN, D. F., FUZEY, I.M., ABOV, Yu.G. Central Scientific Research Institute of Metallurgy, Moscow - "Neutron diffraction investigation of order-disorder in the alloys 'Ferrum-nickel and ferrum-cobalt'" (J-1)

OZEROV, R. P., KOGAN, V. S., ZHDANOV, G. S., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "Neutron diffraction study of the structure of solid hydrogen and deuterium" (C-8)

PINSKER, Z. G., Institute of Crystallography, Academy of Sciences USSR, Moscow - "Results and progresses of electron diffraction analysis" (C-11)

FUZEY, I. M., Scientific Research Institute of Metallurgy, Moscow - "Magnetic anistropy in monocrystals of Ni-Fe-Co alloys" (M-9)

SHUR, Yakov S., Scientific Research Institute of Metallurgy, Moscow - "Some problems of the physics of high coercive materials" (M-27)

SMOLENSKIY, G. A., Institute of Semiconductors, Leningrad - "Some investigations of non-metallic ferro and antiferromagnetics" (M-13)

VAYNSHTEYN, B. K., Institute of Crystallography, Academy of Sciences USSR - "Development of electron diffraction method" (C-11)

ZHELUDEV, I. S., BELOV, N. V., NOZIK, Y. Z., Institute of Crystallography, Moscow - "Atomic and magnetic structures of magnese ferrite" (J-2)

VONSOVSKIY, S. V., Institute of the Physics of Metals, Academy of Sciences USSR, Sverdlovsk. A member of the IUPAP Commission on Magnetism. See paragraph 1 of Comment for a complete listing of members of the Commission. "Some investigations of Soviet physics on the theory of ferromagnetism for the last years" (Invited paper. Section M-11)

paper to be submitted for the IUPAP Intl. Conference on Magnetism and Crystallography, Kyoto, Japan, 25-30 Sep 1961

KOGEN, V.S.

Small Cretaceous intrusions of granitoids in the upper Maya River (Aldan Shield). Trudy VAGT no.7:112-120 '61. (MIRA 14:7)
(Maya Valley—Rocks, Igneous)

OZEROV, R.P.; KOGAN, V.S.; ZHDANOV, G.S.; KUKHTO, O.L.

Crystalline structure of solid hydrogen isotopes. Kristallografiia 6 no.4:631-632 Jl-Ag '61. (MIRA 14:8)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova i Fiziko-tekhnicheskiy institut AN USSR.
(Hydrogen--Isotopes) (Crystallography)

89199

S/056/61/040/001/004/037
B102/B204

24.7100

AUTHORS: Kogan, V. S., Lazarev, B. G., Bulatova, R. F.

TITLE: Differences in the lattice constants of neon isotopes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 1, 1961, 29-31

TEXT: The authors know of only one single case in which the attempt had been made to find differences in the lattice parameters of elements heavier than helium. On Li^6 and Li^7 a difference of 0.0015 A was found to exist, a value which is near the limit of measuring accuracy. Theoretically, the differences of the lattice parameters of the isotopes of noble gases, i.e. the differences of the molar volumina in the solid phase have repeatedly been investigated; for neon, one obtained the following at 0^oK: $\Delta V/V = 0.6\%$. An experimental study was the purpose of the present paper. By means of X-ray analysis, the structures of Ne^{20} (99% pure) and of Ne^{22} (98% pure) were examined. The specimens freed from air and helium impurities, were obtained in form of polycrystalline layers, viz., the neon isotope was precipitated from the gaseous phase onto a copper capillary

Card 1/4

tube, which was cooled from the inside by means of liquid helium. The experimental arrangement for the X-ray examination of such a specimen is described in Ref. 5. A typical X-ray diagram recorded by means of this device, on which also the Cu lines are visible, is shown in the figure. The X-ray diagrams were photometrized, the distances between the maxima of the interference lines were measured with an accuracy of ± 0.03-± 0.05 mm. The corrections for sample thickness were carried out according to Kurdyumov. The results of the studies are shown in the table; the data of the lattice parameters are accurate up to $\pm$ 0.004 A. Both isotopes have face-centered cubic lattices; for the light isotope, a = 4.471 A , and for the heavy one, a = 4.455 A; $\Delta V/V = (1.1 \pm 0.5)\%$. The line intensities found in the X-ray diagrams deviated considerably from the calculated values. Thus, in Cu - K_α and Fe - K_α radiations, the intensity of the (200) lines compared with those of the (111) lines were considerably lower than calculated, the intensity of the (222) line of the Fe - K_α-radiation was higher. This is explained by the fact that the neon precipitated from the gaseous phase upon the capillary tube has a texture, in which the [111] axis is radially orientated toward the capillary tube. The intensity ratios of the same interference lines - $I_{hkl}(Ne^{22})/I_{hkl}(Ne^{20})$ is higher and grows more

S/056/61/040/001/004/037
B102/B204

Differences in the lattice ...

quickly with increasing scattering angle than would have been theoretically expected. By way of a summary it is said that the $\Delta V/V$-value obtained shows good agreement with theoretical results considering the energy differences of zero vibrations. By far greater differences of the molar volumes of the Ne isotope - compared to the Li isotopes - are ascribed to the difference in the binding forces in the neon and lithium lattices. B. Ya. Pines is mentioned in the paper. There are 1 figure, 1 table, and 8 references: 2 Soviet-bloc and 6 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: July 6, 1960

Card 3/4

89199

S/056/61/040/001/004/037
B102/B204

Differences in the lattice ...

hkl	1 Интенсивность для Ne^{22}		θ (Ne^{20})	θ (Ne^{22})	a (Ne^{20}), KX	a (Ne^{22}), KX
	2 расчет	3 измерено				
(111)	100	100				
(200)	48	8	29°06'	29°13,5'	4,470	4,459
(220)	27	21	34°48'	34°57'	4,472	4,456
(311)	25	20,5				
(222)	8,4					
(400)	4,2					
(331)	7,0			50°38,3'	4,470	4,456
(420)	8,4	10,5	50°20,4'	57°53'	4,471	4,451
(422)	4,9	8	57°29'	63°55,5'		4,452
(333)(511)	8,0	10,5				
				4 Среднее:	4,471	4,455

Legend to the table: Results of evaluation of X-ray diagrams of Ne^{20} and Ne^{22} (Cu - K_α radiation); 1) intensity for Ne^{22}, 2) calculated, 3) experimental, 4) mean values.

Card 4/4

KOGAN, V.S.; LAZAREV, B.G. BULATOVA, R.F. Prinimal uchastiye: BULATOV, A.S., diplomant

Differences in the lattice constants of isotopes of neon. Zhur. eksp. i teor. fiz. 40 no.1:29-31 Ja '61. (MIRA 14:6)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR.
(Neon--Isotopes)

KOGAN, V.S.; LAZAREV, B.G.; OZEROV, R.P.; ZHDANOV, G.S.

Neutron diffraction study of the crystalline structure of solid hydrogen and deuterium. Zhur. eksp. i teor. fiz. 40 no.4:1022-1026 Ap '61. (MIRA 14:7)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR i Fiziko-khimicheskiy institut imeni L.Ya. Karpova.

(Neutrons--Diffraction) (Low temperature research) (Hydrogen crystals) (Deuterium crystals)

16687

S/126/62/013/002/017/019
E039/E135

18.1735

AUTHORS: Vasyutinskiy, B.M., Kogan, V.S., Kartmazov, G.N., and Yakimenko, L.F.

TITLE: The formation of textured layers of nitride on chromium obtained by condensation in vacuum from the vapour phase

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962, 310-311

TEXT: It is shown that the skin formed on the surface of chromium when heated in air or oxygen consists of two layers: an external layer of rhombic Cr_2O_3 and an internal layer of hexagonal Cr_2N. This was discovered by means of X-ray diffraction measurements. The structure of the skin formed on chromium when heated in air and in nitrogen up to 1300 °C was examined for two different samples: one was chromium cast and rolled in vacuum, and the other a sample of chromium obtained by condensation from the vapour phase. This condensation was carried out at a pressure of 10^{-3} mm Hg on to a molybdenum plate over a period of

Card 1/2

21.2100

S/126/62/013/002/018/019
E039/E135

AUTHORS: Kovtun, S.F., and Kogan, V.S.

TITLE: Texture and its connection with the change in dimensions of uranium samples with cyclic heat treatment

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962, 316-317

TEXT: The change in dimensions after heat cycling in uranium is caused either by a phase transformation or by its anisotropic coefficient of thermal expansion which results in an irreversible change of dimensions. It has been shown that this occurs only if the metal has a marked texture and that if a sample is raised to a temperature in the β phase range and then chilled to room temperature the texture is almost completely destroyed, and the coefficient of growth on heat cycling is greatly reduced. However, it has been subsequently shown that uranium can maintain a marked texture after heat cycling and that the value and even the sign of the change in dimensions of a sample depends on the condition of the metal.

Card 1/2

24,7100

15585

S/056/62/042/003/049/049
B108/B102

AUTHORS: Kogan, V. S., Khotkevich, V. I.

TITLE: Temperature dependence of the isotopic effect in the lattice constant of Li

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 916-917

TEXT: Data from Ref. 1 (see below) on the isotopic effect in the magnitude of the Li lattice constant refer to a temperature of 300°K. At this temperature, the lattice constant of the light isotope ($a(Li^6) = 3.5107 \pm 0.0009$ Å) is by 0.0015 Å greater than that of the heavy isotope ($a(Li^7) = 3.5092 \pm 0.0006$ Å). The relative difference in the volumes $\Delta V/V$ is about 0.1%. It has been shown for Ni isotopes that this difference between the lattice constant of the light isotope and that of the heavy one becomes less at higher temperature, and may even turn zero and reverse its sign. Consequently, the isotopic effect in Li should be more distinct at low temperatures. In order to verify this the authors

Card 1/3

Temperature dependence of the ... S/056/62/042/003/049/049
B108/B102

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: January 24, 1962

Card 3/3

S/056/62/042/006/015/047
B104/B102

AUTHORS: Kogan, V. S., Bulatoz, A. S.

TITLE: The temperature dependence of the isotopic effect in nickel lattice

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 6, 1962, 1499-1501

TEXT: The isotopic effect on Ni^{58} and Ni^{64} was investigated by means of x-ray analysis at nitrogen temperature and room temperature. At nitrogen temperature the lattice parameter of the lighter isotope is larger than that of the heavier ($\Delta a = 0.0005 \pm 0.0002$ Å). At room temperature the isotopic effect approaches zero but has a negative sign ($\Delta a = -0.0002 \pm 0.0002$ Å). The diminution of the isotopic effect can be explained by reference to the Debye theory of a solid body, but inversion of the isotopic effect does not follow from this theory. A comparison of the data on the isotopic effect for nickel with earlier data for other isotopes shows that in lattices with similar binding forces the relative change in the molar volume increases almost linearly with $\Delta M/M$. For

Card 1/2

The temperature dependence of ...

metals the slope of the straight line is twice as steep as for lattices with binding forces of the Van der Waals type. B. G. Lazarev, Academician of the AS UkrSSR, is thanked for his interest. There is 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: January 30, 1962

KOGAN, V.S.; KHOTKEVICH, V.I.

Temperature dependence of the isotopic effect in the magnitude of the parameter of the lithium lattice. Zhur.eksp.i teor.fiz. 42 no.3:916-917 Mr '62. (MIRA 15:4)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR.
(Lithium--Isotopes) (Lattice theory)

L 19581-63 EPR/EPF(c)/EWP(q)/EWT(m)/EWP(b)/BDS AFFTC/ASD Pr-4/
Ps-4 WW/JD/WH/JG/K/MLK(a)
ACCESSION NR: AP3007610 S/0286/63/000/010/0072/0072

AUTHOR: Vasyutinskiy, B. M.; Kogan, V. S.; Lazarev, B. G.; Lazareva, L. S.

TITLE: Tinplating of graphite. Class 48, No. 154752

SOURCE: Byul. izobret. i tovarny*kh znakov, no. 10, 1963, 72

TOPIC TAGS: graphite tinning, graphite tinplating, vacuum tinning, vacuum tinplating, carbide forming additives, tin coat

ABSTRACT: A patent has been issued for a method of tinning graphite parts by immersing them in molten tin. To obtain a high-quality tin coat, the tinning process is carried out in vacuum at 1000C with a maximum of 0.01% tungsten, molybdenum, titanium, zirconium, or other carbide-forming metals added to the tin bath.

ASSOCIATION: none

SUBMITTED: 21Jun62 DATE ACQ: 14Oct63 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

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S/185/62/007/007/003/010
I048/I248

11.3110

AUTHORS: Kogan, V.S., Lazarev, B.G., and Bulatova, R.F.

TITLE: The phase diagram of the system liquid-solid formed by the hydrogen isotopes

PERIODICAL: Ukrains'kyy fizychnyy zhurnal, v.7, no.7, 1962, 732-736

TEXT: The phase diagram of the system H_2-D_2 at temperatures from 4 to 20°K was obtained using X-ray analysis of the polycrystalline specimen (at $\leq$ 4.2°K) thermal analysis of the mixture (at 14-20°K). Both H and D have a tetragonal lattice but the axis ratio c/a is < 1 in the case of H and > 1 in the case of D. The solubility of H in the D lattice at 4.2°K is 20% by vol., that of

Card 1/2

BULATOVA, R.F.; GRIGOR'YEV, V.N.; KOGAN, V.S.

Microcolumn for separating and analyzing mixtures of hydrogen isotopes. Atom. energ. 12 no.5:428-429 My '62. (MIRA 15:5)
(Hydrogen—Isotopes) (Chemical apparatus)

44044

S/053/62/078/004/002/004
B164/B102

24.7000

AUTHOR: Kogan, V. S.

TITLE: Isotopic effects on the structural properties of solids

PERIODICAL: Uspekhi fizicheskikh nauk, v. 78, no. 4, 1962, 579 - 617

TEXT: The article reviews the results of investigations during the last 30 years relating to isotopic effects in solids. The individual chapters deal with volume changes of unit cells in chemical compounds when light isotopes are substituted by heavier ones; determination of the temperature-dependence of isotopic effects from the lattice parameters and the variation of the phase-transformation temperature in deuterized compounds; cryostat types for studying the isotopic structure by x-ray and neutron diffraction at low temperatures; isotope morphotropy of hydrogen isotopes; isotopic effects on the lattice parameters of isotopes of rare gases (He, Ne) and metals (Li, Ni) and their temperature dependence; experiments for the theoretical treatment of isotopic effects in solids; magnitude and sign of effects in crystals with various binding forces; mixed crystals of hydrogen isotopes; constitution diagrams for the solid-liquid phase of systems with hydrogen isotopes. There are 17 figures, 4 tables, and 119

Card 1/2

Isotopic effects on the...

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B164/B102

references.

Card 2/2

KOVTUN, S.F.; KOGAN, V.S.

Texture and its connection with changes in the dimensions of uranium specimens under the effect of cyclic heat treatment. Fiz. met. i metalloved. 13 no.2:316-317 F '62. (MIRA 15:3)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Uranium--Heat treatment)

KOGAN, V.S.; BULATOV, A.S.

Temperature dependence of the isotopic effect in the nickel lattice. Zhur. eksp. i teor. fiz. 42 no.6:1499-1501 Je '62. (MIRA 15:9)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR.
(Nickel--Isotopes) (Crystal lattices)

VASYUTINSKIY, B.M.; KOGAN, V.S.; KARTMAZOV, G.N.; YAKIMENKO, L.F.

Formation of textured nitride layers on chromium obtained by condensation in vacuum from the vapor phase. Fiz. met. i metalloved. 13 no.2:310-311 F '62. (MIRA 15:3)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Vapor plating) (Chromium--Metallography)

KOGAN, V.S.; LAZAREV, B.G.; BULATOVA, R.F.

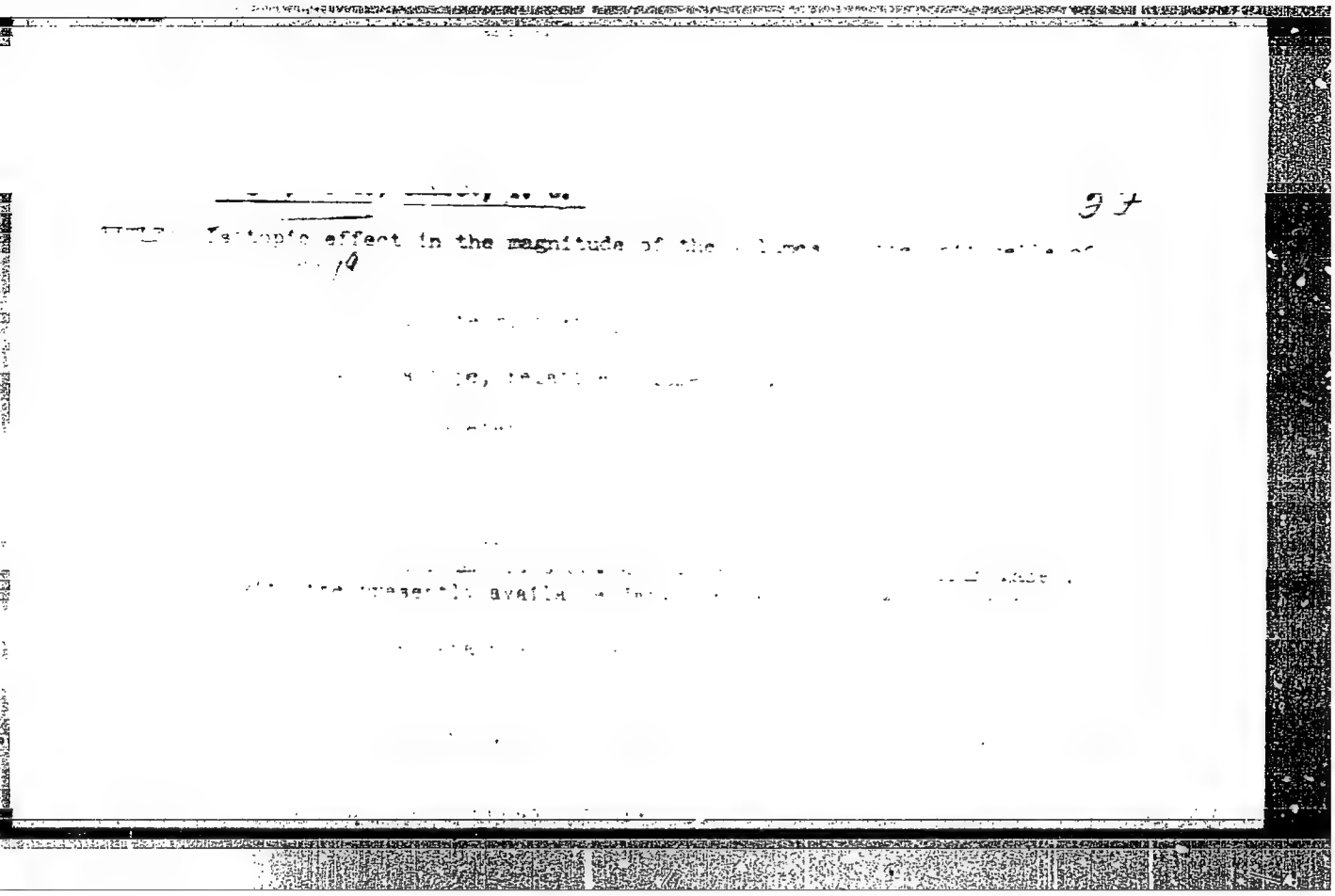
Phase diagrams of solid - liquid systems formed by hydrogen isotopes. Ukr.fiz.zhur. 7 no.7:732-736 Jl '62. (MIRA 15:12)

1. Fiziko-tekhnicheskiy institut AN UkrSSR, Khar'kov.
(X rays—Diffraction) (Hydrogen—Isotopes)
(Phase rule and equilibrium)

KOGAN, V.S.; KRIVKO, A.I.; LAZAREV, B.G.; LAZAREVA, L.S.; MATSAKOVA, A.A.; OVCHARENKO, O.N.

Constitutional diagram of the system Nb - Sn. Fiz.met.i metalloved. 15 no.1:143-145 Ja '63. (MIRA 16:2)

1. Khar'kovskiy fiziko-tekhnicheskiy institut AN UkrSSR.
(Diffusion coatings) (Niobium-tin alloys)
(Phase rule and equilibrium)



BULATOVA, R. F.; KOGAN, V. S.

Temperature dependence of isotopic effects in the structural properties of hydrogen isotopes. Zhur. eksp. i teor. fiz. 46 no. 3:840-842 Mr '64. (MIRA 17:5)

1. Fiziko-tekhnicheskiy institut AN UkrSSSR.

ACCESSION NR: AP4012535 S/0056/64/046/001/0148/0152

AUTHORS: Kogan, V. S.; Bulatov, A. S.; Yakimenko, L. F.

TITLE: Texture in layers of hydrogen isotopes condensed in a cooled substrate

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 148-152

TOPIC TAGS: hydrogen isotopes, protium, deuterium, tritium, x ray structure, condensed hydrogen isotope, layer texture, protium crystal structure, deuterium crystal structure, tritium crystal structure, texture effect

ABSTRACT: To ascertain whether the difference between the x-ray diffraction patterns of condensed deuterium and protium is due to the presence of a texture, in contradiction to the earlier assumption by the authors (ZhETF v. 37, 678, 1939) that the difference is due to differences in extinction rules, the earlier experimental

Card 1/2

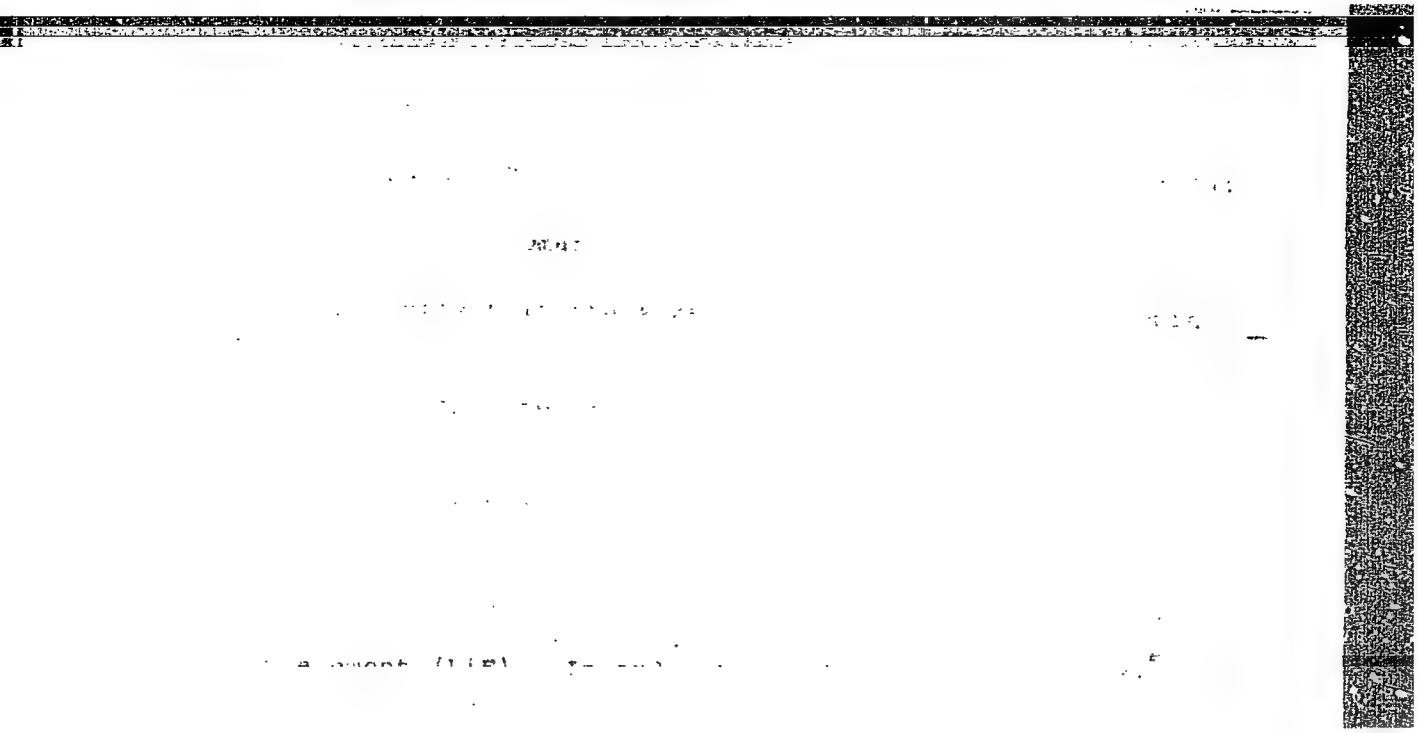
2

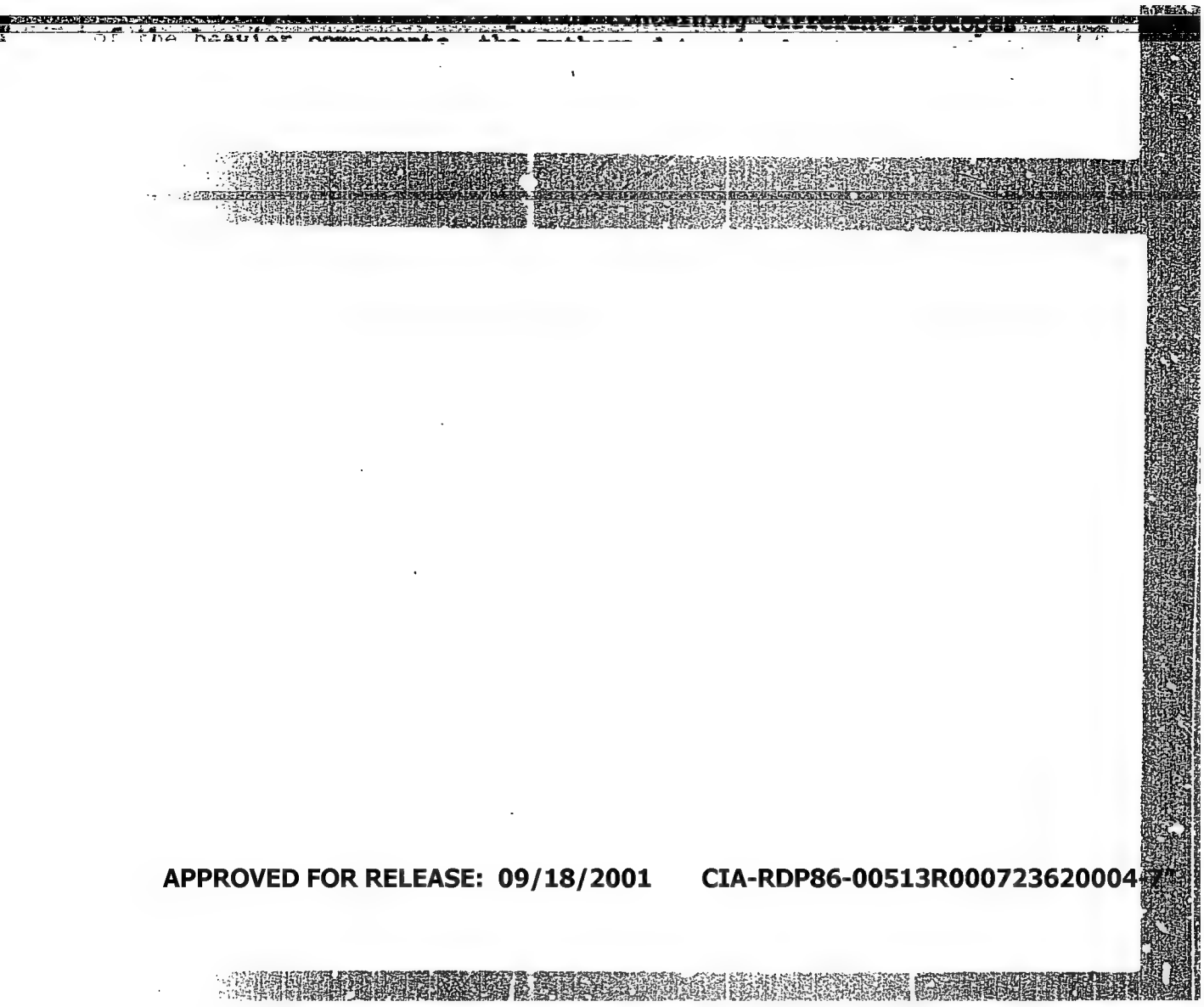
ACCESSION NR: AP4012535

procedure was modified. X-ray photographs were taken with the hydrogen isotopes condensed in one case inside a beryllium tube and in the other on the surface of a copper rod. Comparison of the photographs shows that the latter specimens have a texture which is not the same for protium layers as for deuterium. Preliminary data were also obtained for tritium. A re-evaluation of the previous structure data in light of the existence of this texture leads to the conclusion that both isotopes have a hexagonal structure with somewhat different axial ratios c/a. For protium the copper-radiation lines are (100), (002), and (101) with c = 6.6 Å and a - 3.78 Å (c/a = 1.63). The corresponding lines for deuterium are (100), (002), and (101) with a = 3.54 Å and c = 5.91 Å (c/a - 1.67). "The authors express their gratitude to Academician AN UkrSSR B. G. Lazarev for a discussion of the results." Orig. art. has: 3 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physicotechnical Institute, AN UkrSSR)

Card 2/2 20 July 62





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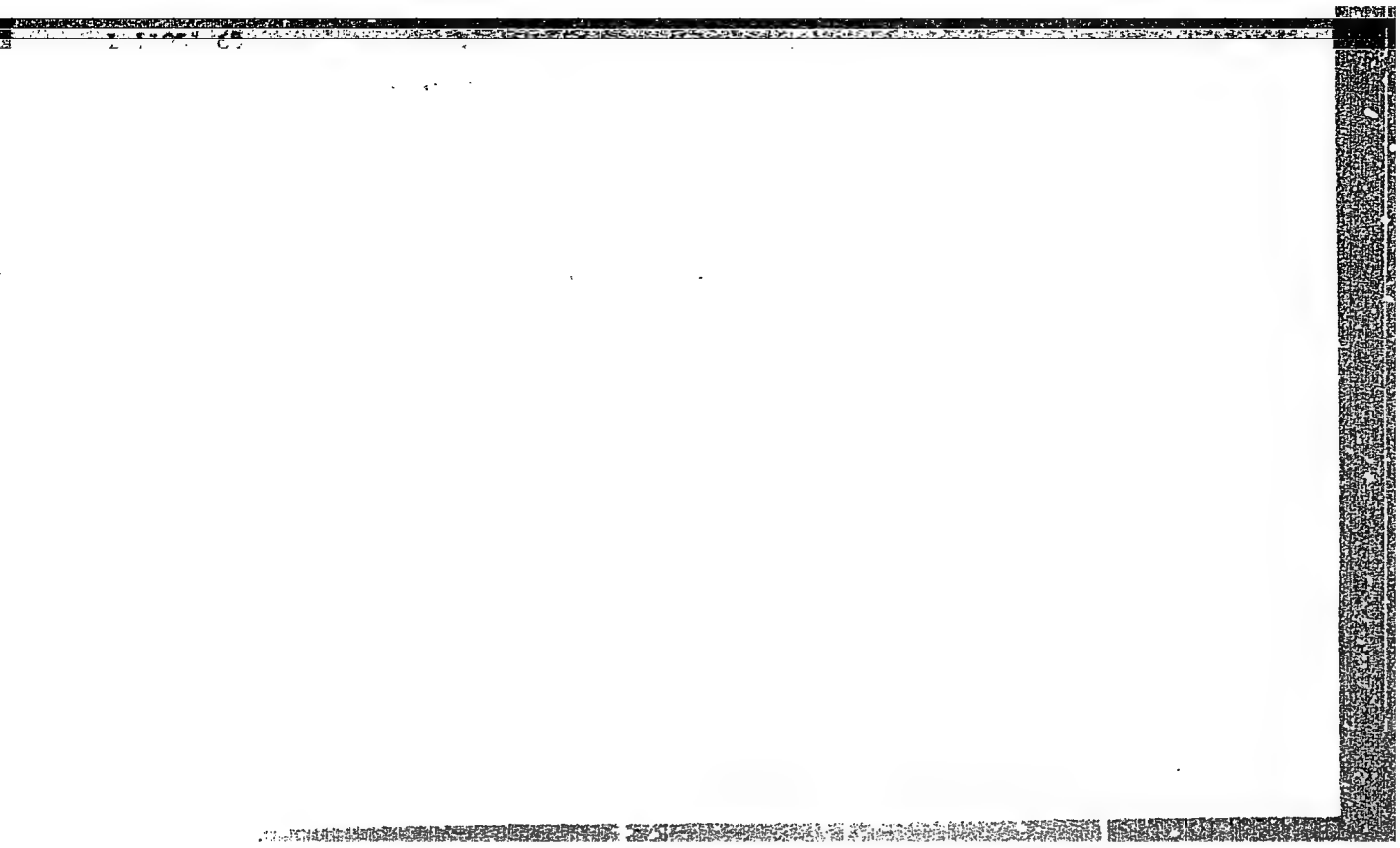
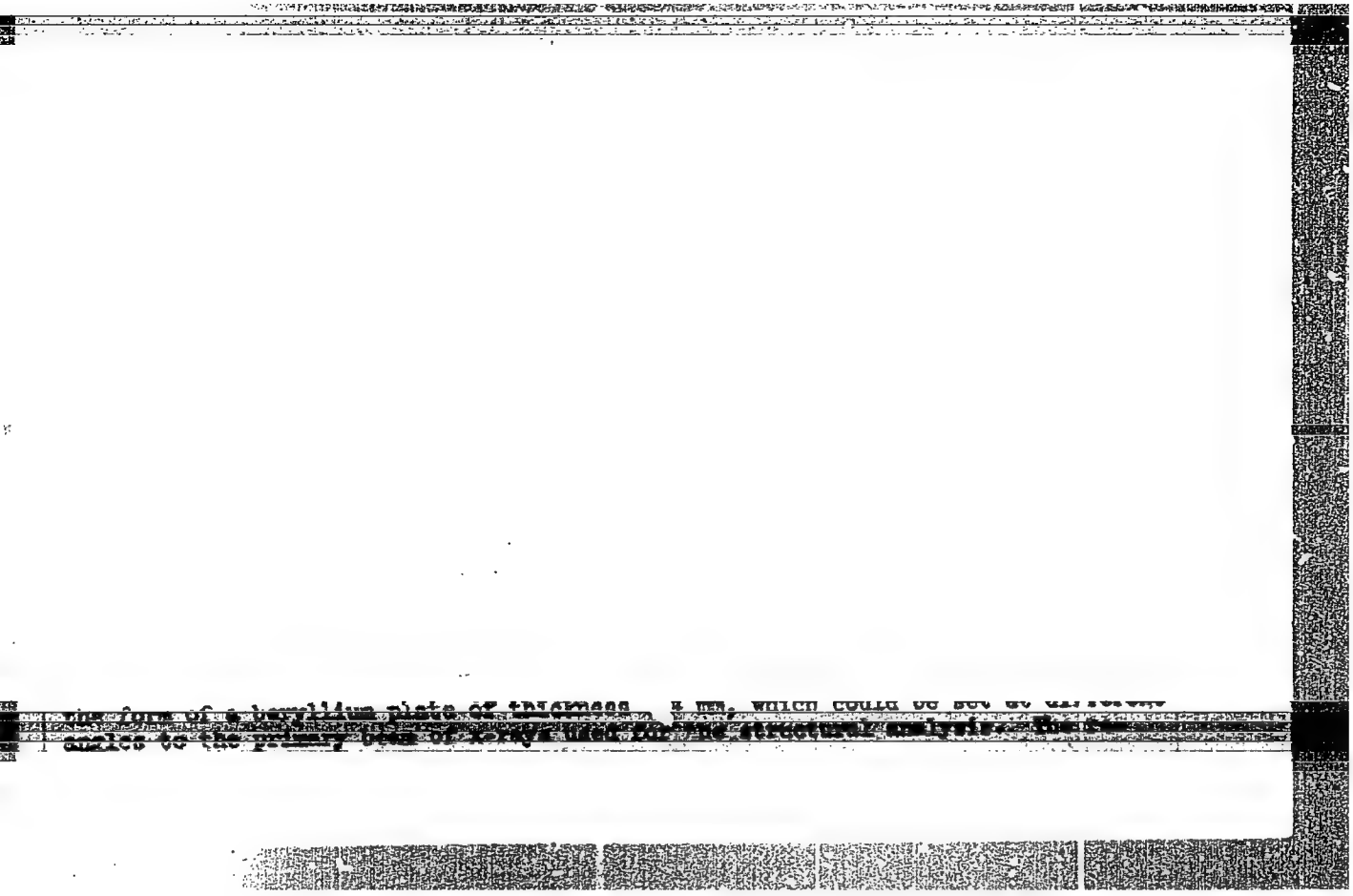
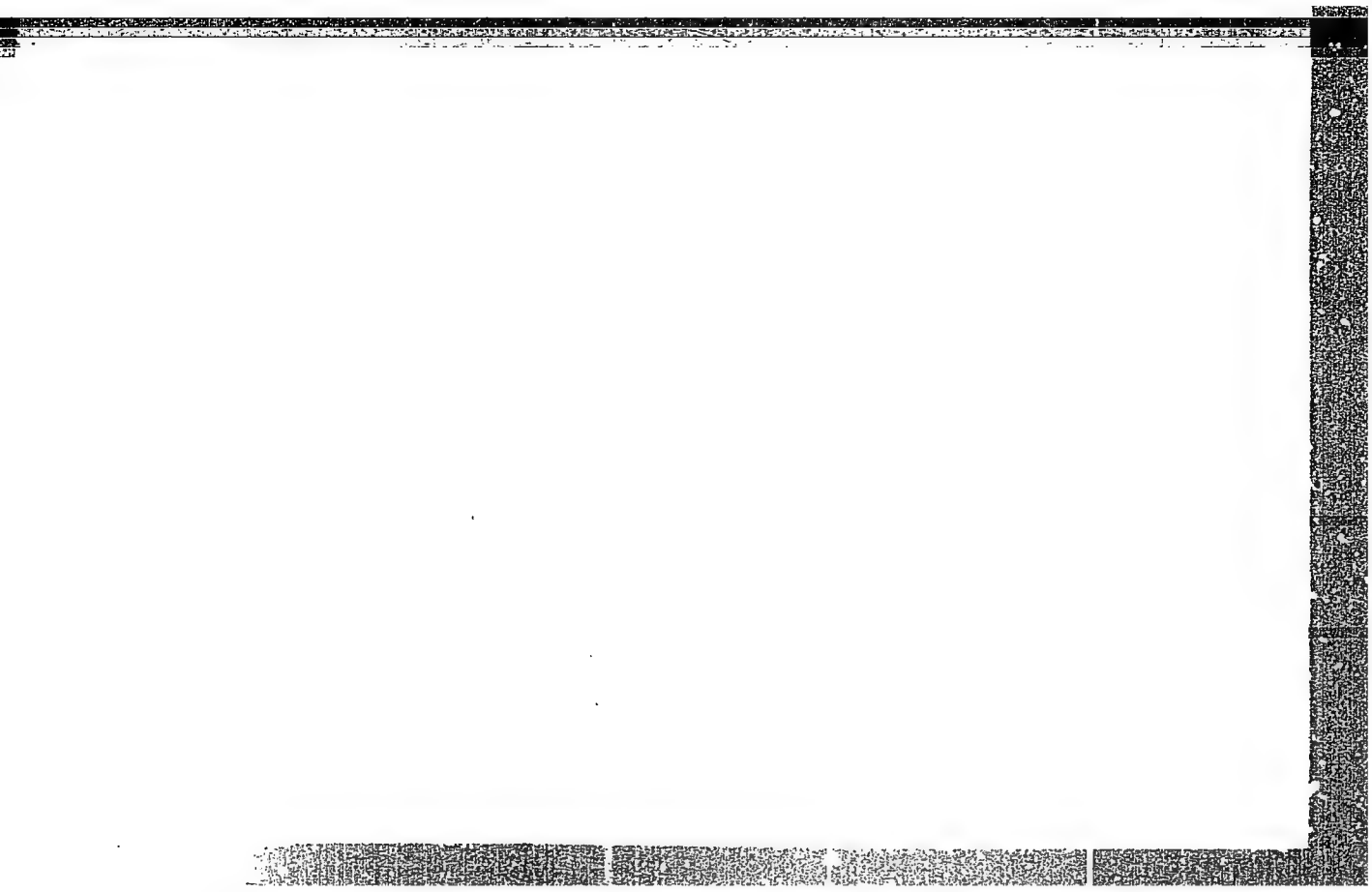


KOGAN, V.S.; OMAROV, T.O.

Isotopic effect in the magnitude of the molar volumes of ionic crystals. Zhur. eksp. i teor. fiz. 47 no.3:789-794 S '64.
(MIRA 17:11)





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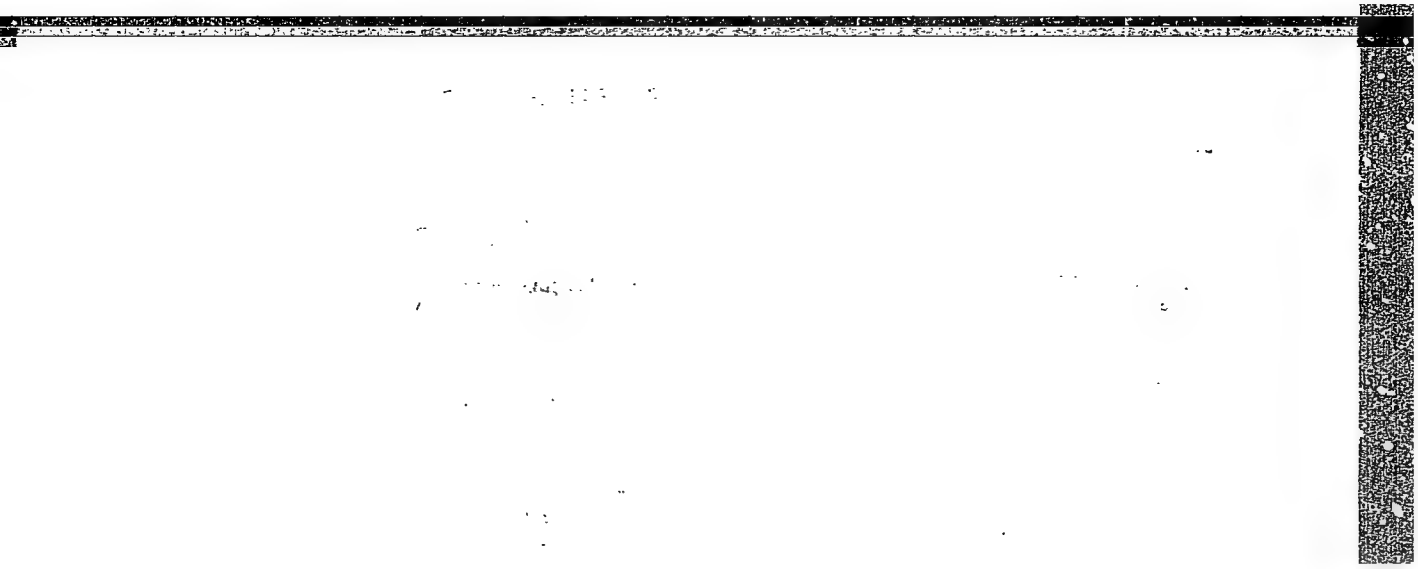

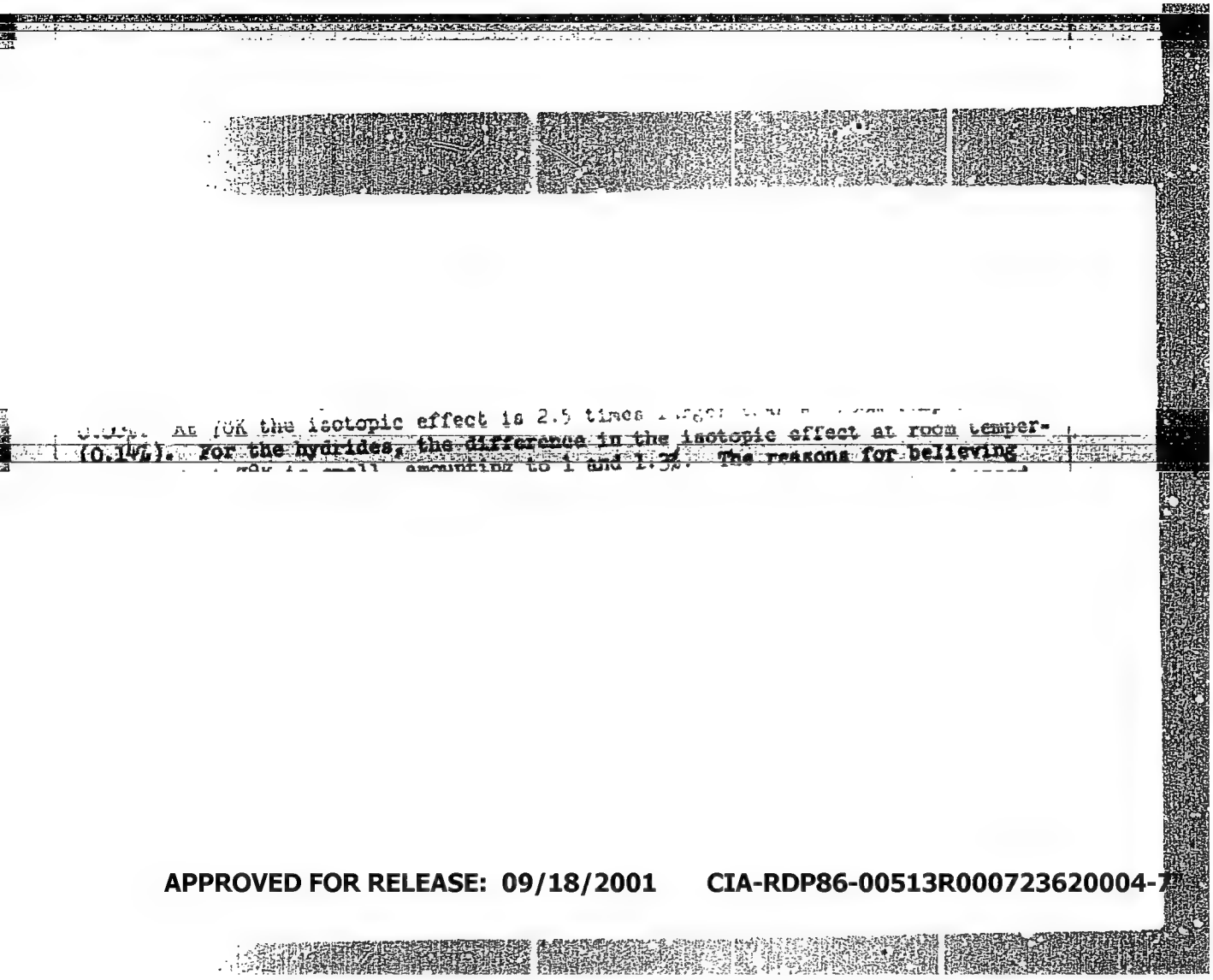

at 70K the isotopic effect is 2.5 times [illegible]
(0.14%). For the hydrides, the difference in the isotopic effect at room temper-
[illegible] amounting to 1 and 1.3%. The reasons for believing

BULATOVA, R.F.; KOGAN, V.S.

Separation in the systems H_2 - HD and D_2 - HD in the solid phase. Zhur. eksp. i teor. fiz. 48 no.1 130-132 Ja '65.
(MIRA 18:4)

L 23592-66 EWT(l)/T IJP(c)
ACC NR: AP6005609 SOURCE CODE: UR/0233/65/000/003/0087/0089

AUTHOR: Kogan, V. S.; Omarov, T. G.

38
B

ORG: none

TITLE: Vacuum and low-temperature x-ray camera

SOURCE: AN AzerbSSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk, no. 3, 1965, 87-89

TOPIC TAGS: x ray diffraction camera, thermal expansion, ionic crystal

ABSTRACT: The camera was developed for taking x-ray pictures of easily oxidizable low-melting samples. In contrast to other such cameras now in existence, it combines the two operations of taking the pictures in a vacuum and in nitrogen vapor at a temperature of 78°K. Provision is made for setting up two samples simultaneously, and moving them successively into the path of the beam. Each sample is photographed on a separate frame without reloading. A detailed diagram of the camera is given and its operation is described. The camera was used for determining the average coefficient of thermal expansion in the range of 78-300°K, and also for studying the isotope effect in the values of the lattice parameters of ionic crystals at 78° and 300°K. In the first case, the same sample at two different temperatures (78° and 300°K) was photographed on two film frames. In the second case, samples differing in isotopic compo-

Card 1/2

L 23592-66

ACC NR: AP6005609 O

sition were photographed at the given temperature (78° or 300°K). Photographing on the same film of two such x-ray diffraction patterns of samples with a small difference in lattice parameters permits the determination of this difference with a high degree of precision. Orig. art. has: 2 figures.

SUB CODE: 14,20/ SUBM DATE: 12Jan65/ ORIG REF: 003/ OTH REF: 000

Card 2/2 BK

L 38546-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/JG/GD

ACC NR: AT6014753 SOURCE CODE: UR/0000/65/000/000/0076/0082

AUTHORS: Kogan, V. S.; Krivko, A. I.; Lazarev, B. G.; Lazareva, L. S.; Matsakova, A. A.; Ovcharenko, O. N.

ORG: none

TITLE: The phase diagram of the niobium-tin system

SOURCE: Soveshchaniye po metallovedeniyu i metallofizike sverkhprovodnikov. 1st, 1964. Metallovedeniye i metallofizika sverkhprovodnikov (Metallography and physics of metals in superconductors); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 76-82

TOPIC TAGS: superconductivity, superconducting alloy, tin base alloy, niobium alloy, x ray analysis, spectrographic analysis, critical magnetic field, intermetallic compound, alloy phase diagram

ABSTRACT: This paper is a continuation of an earlier work by V. S. Kogan, A. I. Krivko, B. G. Lazarev, L. S. Lazareva, A. A. Matsakova, and O. N. Ovcharenko (FMM, 1963, 15, 143) in which it was found that specimens produced by holding niobium in molten tin at temperatures above and below 850C differed in their superconducting properties. The superconductivity transition temperature for specimens produced at 990C and 1250C is 18.0K and 18.1K, respectively (see Fig. 1). For diffusion layers formed at below 850C, the superconductivity transition temperature is reduced; the lower T_k, the lower the temperature of formation of the layer. For specimens

Card 1/3

L 38546-66

ACC NR: AT6014753

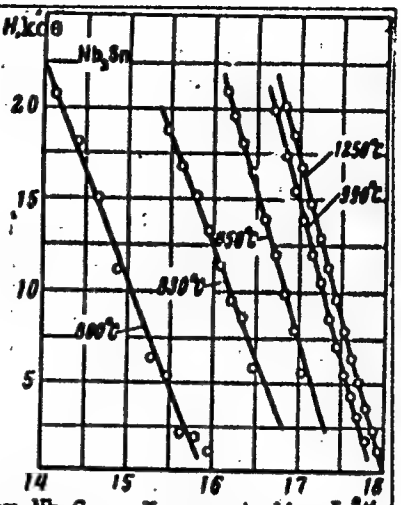

Fig. 1. Critical magnetic field H_k as a function of temperature for diffusion layers of Nb_3Sn obtained at temperatures of 800—1250C.

obtained at above 850C, T_k agrees with the known value for Nb_3Sn. X-ray studies confirmed that only the compound Nb_3Sn is formed when specimens are prepared at over 850C. For temperatures below 850C, the diffraction pattern shows that Nb_2Sn_3 is formed. It was concluded that in specimens prepared at temperatures below 850C there is present a very thin interlayer beneath the new phase. The formula NbSn is ascribed to the new compound. The superconductivity transition temperature of the NbSn was found to be 2.7K. In other papers the new compound has been given the

Card 2/3

L 38546-66
ACC NR: AT6014753 /.

formula $NbSn_2$ or Nb_2Sn_3. The authors thank L. N. Mosova for conducting the qualitative spectral analysis. Orig. art. has: 5 graphs, 1 table, and 1 photograph.

SUB CODE: 11, 20/ SUBM DATE: 23Dec65/ ORIG REF: 002/ OTH REF: 018

Card 3/3 llb

L 32037-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6018939 SOURCE CODE: UR/0126/66/021/006/0828/0832

AUTHOR: Kogan, V. S.; Lazarev, B. G.; Matsakova, A. A.; Ovcharenko, O. N.; Yakimenko, L. F.

ORG: Physicotechnical Institute, AN UkrSSR (Fiziko-tekhnicheskiy institut AN UkrSSR)

TITLE: The width of the homogeneity region of intermetallic phases in the Nb-Sn and V-Ga systems

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 6, 1966, 828-832

TOPIC TAGS: superconducting compound, niobium alloy, binary alloy, tin containing alloy, vanadium alloy, gallium containing alloy, intermetallic compound, compound homogeneity region

ABSTRACT: Experiments have been made to determine the width of the homogeneity region of intermetallic phases formed in the Nb-Sn and V-Ga systems, i.e., systems whose components have widely different melting temperatures. Nb_3Sn and V_3Ga intermetallic compounds were obtained by diffusion of Nb_3Sn by holding an Nb specimen for several hours in molten tin at 1000C, and V_3Ga by holding a vanadium specimen wetted with gallium in a vacuum at about 1200C. X-ray diffraction patterns of the diffusion layer on vanadium showed that the surface layer contacting gallium and the inner layer adjacent to vanadium had equal lattice parameters, 4.819 ± 0.002 Å. The temperature of transition to the superconductivity state of V_3Ga was found to be

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L 32037-66

ACC NR: AP6018939 O

14.44K with a transition zone width of 0.2K. These data confirmed that the diffusion zone consisted only of V_3Ca compound of stoichiometric composition. Similar results were obtained for Nb_3Sn compound. The layers adjacent to Sn and Nb had the same lattice parameters, equal to 5.288 ± 0.001 A, which showed that the homogeneity region of Nb_3Sn compound is also very narrow. A wide homogeneity region reported in some earlier works for the refractory metal-rich phases in alloys whose components have widely different melting temperatures is presumably a result of tested alloys being in nonequilibrium state owing to a low diffusion rate of these phases. Orig. art. has: 3 figures. [MS]

SUB CODE: 11/ SUBM DATE: 26Jul65/ ORIG REF: 004/ OTH REF: 005/ ATD PRESS: 5019

Card 2/2

ACC NR: AP6037060 (N) SOURCE CODE: UR/0056/66/051/005/1328/1331

AUTHOR: Kogan, V. S.; Lazarev, B. G.; Yakimenko, L. F.

ORG: Physicotechnical Institute, Academy of Sciences UkrSSR (Fiziko-tekhnicheskiy institut Akademii nauk UkrSSR)

TITLE: X-ray diffraction analysis of the structure of niobium-base superconducting alloys

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 5, 1966, 1328-1331

TOPIC TAGS: niobium base alloy, zirconium containing alloy, titanium containing alloy, superconducting alloy, alloy structure

ABSTRACT: A series of niobium-zirconium-titanium alloys containing 5—50% zirconium and 10—20% titanium has been investigated. It was found that all the as-cast specimens had the structure of a high-temperature cubic β-phase. Annealing of specimens containing up to 10% zirconium at temperatures up to 600C did not cause structural changes, which indicated that the β-phase was in equilibrium. Annealing of the alloys containing 20% zirconium at 550—600C caused a decomposition of the β-phase. In alloys containing 30% zirconium, the decomposition began at 450C, and annealing at 560C produced an equilibrium structure consisting of β- and α-phases. Orig. art. has: 4 figures and 1 table. [TD]

SUB CODE: 11/ SUBM DATE: 08Jun66/ ORIG REF: 001/ OTH REF: 003/ ATD PRESS: 5109

Card 1/1

ACC NR: AT7004209 SOURCE CODE: UR/0000/66/000/000/0121/0127

AUTHORS: Kogan, V. S.; Vasyutinskiy, B. M.; Lazarev, B. G.

ORG: none

TITLE: Studying phase diagrams with the use of diffusion layers

SOURCE: AN SSSR. Institut metallurgii. Eksperimental'naya tekhnika i metody vysokotemperaturnykh izmereniy (Experimental techniques and methods of high temperature measurement). Moscow, Izd-vo Nauka, 1966, 121-127

TOPIC TAGS: metal phase system, metal vapor deposition, metallographic examination, nickel, chromium, molybdenum, niobium, tin, iron, tantalum

ABSTRACT: The obtaining of metal phase diagrams by a multilayer technique is described. The technique, an extension of the work of L. S. Palatnik, V. M. Kosevich, and L. V. Tyrina (FMM, 1961, 11, 229), consists of condensing an appropriate metallic vapor mixture and of subsequently preparing a thin polished section from the condensate. This technique was applied to the study of the phase diagrams of the following systems: Cr-Ni, Nb-Sn, Fe-Ta, and Mo-Cr-Ni. The experimental results, shown graphically (see Fig. 1), were published earlier in three communications by B. M. Vasyutinskiy and V. S. Kogan (FMM, 1960, 9, 564). In addition, x-ray powder pictures were taken and the microhardness of the specimens was determined. The results are shown graphically. It is concluded that the condensation-diffusion layer

Card 1/2

ACC NR: AT7004209

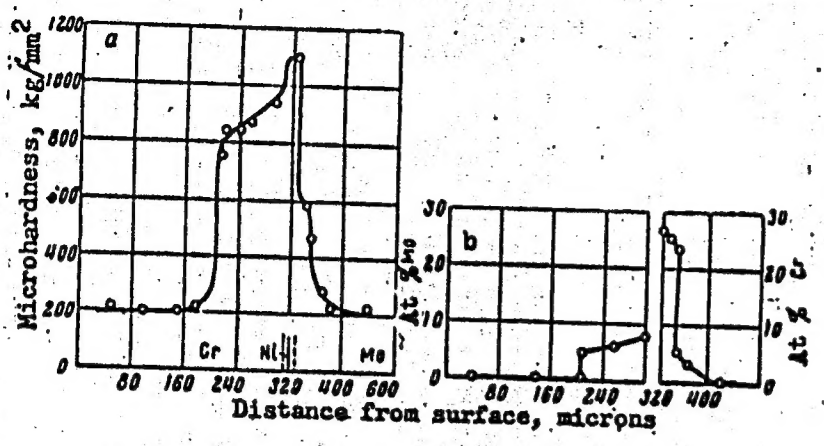

Fig. 1. Microhardness curves (a) and composition of the γ-solid function (b) of the system Mo-Cr-Ni, as a function of the distance from the surface layer of a specimen

technique is not capable of yielding the complete phase diagram for the system and that it requires, for successful application, some preliminary knowledge about the system. The Nb-Sn system was studied by V. S. Kogan, B. G. Lazarev, L. S. Lazareva, A. I. Krivko, and A. A. Matsakova.. Orig. art. has: 5 graphs.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 012/ OTH REF: 006

Card 2/2